IBM **CEM** Customer Engineers Memorandum

Customer Service Division

Group 259 "Selectric" Typewriter

0 COMBINED SERVICE INFORMATION

Printed In USA (Revised) March, 1983

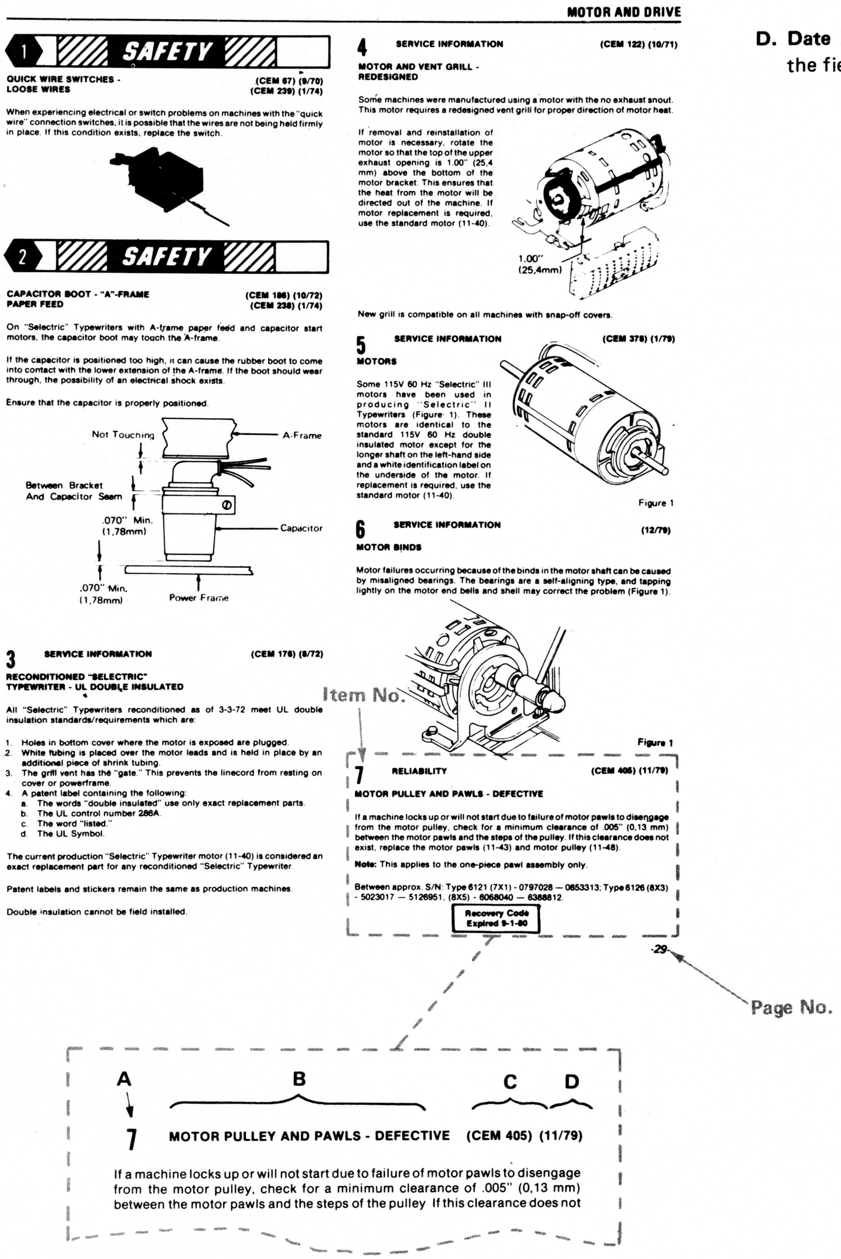
This Combined Service Information (CSI) booklet will always be labeled CEM No. "0." The information in this booklet comes from published CEMs. Current CEMs start on page 1.

This publication is to be used with the "Technical Information Index" (TII) page. The TII will indicate the page and item number of each piece of information printed in this booklet.

The following is an explanation of the features and use of the TII and CEM No. "0" (Combined Service Information — "CSI").

These samples are designed to relate to each other and will not necessarily match the current publications.

Page Sample


Not Touching
A-Frame
Between Bracket And Capacitor Seam
.070" Min. (1,78mm)
Capacitor
.070" Min. (1,78mm)
Power Frame
1.00" (25,4mm)
Item No.
Page No.
A
B
C
D

MOTOR AND DRIVE

1 SAFETY

QUICK WIRE SWITCHES - LOOSE WIRES (CEM 67) (9/70) (CEM 239) (1/74)

When experiencing electrical or switch problems on machines with the "quick wire" connection switches, it is possible that the wires are not being held firmly in place. If this condition exists, replace the switch.

2 SAFETY

CAPACITOR BOOT - "A"-FRAME PAPER FEED (CEM 186) (10/72) (CEM 238) (1/74)

On "Selectric" Typewriters with A-frame paper feed and capacitor start motors, the capacitor boot may touch the A-frame.

If the capacitor is positioned too high, it can cause the rubber boot to come into contact with the lower extension of the A-frame. If the boot should wear through, the possibility of an electrical shock exists.

Ensure that the capacitor is properly positioned.

3 SERVICE INFORMATION (CEM 176) (8/72)

RECONDITIONED "SELECTRIC" TYPEWRITER - UL DOUBLE INSULATED

All "Selectric" Typewriters reconditioned as of 3-3-72 meet UL double insulation standards/requirements which are:

1. Holes in bottom cover where the motor is exposed are plugged.
2. White tubing is placed over the motor leads and is held in place by an additional piece of shrink tubing.
3. The grill vent has the "gate." This prevents the linecord from resting on cover or powerframe.
4. A patent label containing the following:
    a. The words "double insulated" use only exact replacement parts.
    b. The UL control number 286A.
    c. The word "listed."
    d. The UL Symbol.

The current production "Selectric" Typewriter motor (11-40) is considered an exact replacement part for any reconditioned "Selectric" Typewriter.

Patent labels and stickers remain the same as production machines.

Double insulation cannot be field installed.

4 SERVICE INFORMATION (CEM 122) (10/71)

MOTOR AND VENT GRILL - REDESIGNED

Some machines were manufactured using a motor with the no exhaust snout. This motor requires a redesigned vent grill for proper direction of motor heat.

If removal and reinstallation of motor is necessary, rotate the motor so that the top of the upper exhaust opening is 1.00" (25,4 mm) above the bottom of the motor bracket. This ensures that the heat from the motor will be directed out of the machine. If motor replacement is required, use the standard motor (11-40).

New grill is compatible on all machines with snap-off covers.

5 SERVICE INFORMATION (CEM 378) (1/79)

MOTORS

Some 115V 60 Hz "Selectric" III motors have been used in producing "Selectric" II Typewriters (Figure 1). These motors are identical to the standard 115V 60 Hz double insulated motor except for the longer shaft on the left-hand side and a white identification label on the underside of the motor. If replacement is required, use the standard motor (11-40).

Figure 1

6 SERVICE INFORMATION (12/79)

MOTOR BINDS

Motor failures occurring because of the binds in the motor shaft can be caused by misaligned bearings. The bearings are a self-aligning type, and tapping lightly on the motor end bells and shell may correct the problem (Figure 1).

Figure 1

7 RELIABILITY (CEM 405) (11/79)

MOTOR PULLEY AND PAWLS - DEFECTIVE

If a machine locks up or will not start due to failure of motor pawls to disengage from the motor pulley, check for a minimum clearance of .005" (0,13 mm) between the motor pawls and the steps of the pulley. If this clearance does not exist, replace the motor pawls (11-43) and motor pulley (11-48).

Note: This applies to the one-piece pawl assembly only.

Between approx. S/N: Type 6121 (7X1) - 0797028 — 0853313; Type 6126 (8X3) - 5023017 — 5126951, (8X5) - 6068040 — 6388812.

Recovery Code Expired 9-1-80

-29-

7 MOTOR PULLEY AND PAWLS - DEFECTIVE (CEM 405) (11/79)

If a machine locks up or will not start due to failure of motor pawls to disengage from the motor pulley, check for a minimum clearance of .005" (0,13 mm) between the motor pawls and the steps of the pulley If this clearance does not

File the TII page in front of the CSI and CEM No. "0" in front of current CEM pages to make up a complete CEM package.

A. Item Number: This number corresponds to the number shown in the TII and is used to locate the information. This number will start with "1" on each new page.

B. Subject And Machine Type/Models: Subject applies to all machine types/models of the product unless otherwise specified. (Example shows machine type/model.)

C. CEM Number: If the information was originally published in a CEM, the number(s) of the CEM(s) will appear in parentheses in this area. If this area is blank, the information was printed in a publication other than a CEM.

D. Date Published: This date is the date the information was sent to the field.

© IBM Corp. 1978, 1979, 1980, 1983

CEM CATEGORIES - EXPLANATION (1/76)

The arrangement of Product CEMs has been made easier. Application categories have been removed and the types of engineering changes have been reduced.

Product CEM Categories Are:

A. **Safety**

SAFETY

1. Purpose - The purpose of the safety CEM is to communicate product safety changes to ensure safe operating and service conditions.
2. Coverage - Safety CEMs will apply to all specified equipment.
3. Conditions - Usually, safety changes will be made on a normal service call if the unsafe condition exists. If the need is high (e.g. possible electrical short), the CEM will have a completion date to ensure quick attention.

Parts and labor will be available at no charge to all customers (Service Agreements, IBM-owned, self-service, competitive service and per call).

Safety CEMs will indicate an expiration date at the time of publication. Non-Service Agreement accounts will be charged per call for parts and labor after expiration date.

Safety CEMs will use service codes as assigned.

B. **Reliability**

1. Purpose - The purpose of the Reliability CEM is to communicate additions or substitutions of parts, or a change in adjustment procedure required to bring a machine, component or supply level consistent with quality standards set by IBM.
2. Coverage - This CEM applies to all specified equipment and supplies.
3. Conditions - Reliability CEMs will be applied to equipment when the specified set of failure conditions exists within a specified range. Usually, this CEM will be applied during a normal service call or preventative maintenance visit on Service Agreement and IBM-owned equipment.

If requested, IBM will provide per call, self-service and competitive service accounts with parts and labor at no charge only if:

The service call was caused by the malfunction in the CEM and the machine is in the correct serial range,
or
While on a call on the same machine, a check for symptoms indicates that a possible failure condition exists.

Reliability CEMs will indicate an expiration date at the time of publication. Non-Service Agreement accounts will be charged per call for parts and labor after expiration date.

Reliability CEMs will use service codes as assigned.

C. **Service Information**

1. The purpose of the Service Information CEM is to:

Communicate changes in design of parts, or in adjustment procedures which are the result of continuing engineering activity for product improvement.

Communicate manufacturing changes which improve assembly or manufacture of equipment or supplies, or improve their serviceability.

Communicate product feature changes designed to extend the capabilities, usefulness, or saleability of the existing product line.

Communicate service tips, service procedures, tool information, and other information.

2. Coverage - Service Information CEMs will apply to all specified equipment and supplies.
3. Conditions - Usually, action indicated in a Service Information CEM will be performed on a normal service call or preventative maintenance visit.

Any parts and/or labor, referred to in the Service Information CEMs will be billable to self-service, per call, and competitive service accounts. Applicable service codes will be used on IBM-owned and Service Agreement equipment.

Service Information CEMs will be deleted as soon as the information is included in a permanent form numbered publication, i.e., parts manual, service manual, tool catalog, etc.

Service Information CEMs will use any number of warranty or nonwarranty service codes as assigned. Normally, no recovery codes will be used after the new equipment warranty has expired.

PRODUCT CEM INSTALLATION GUIDE

Safety	**Reliability**	**Service Information**
Parts and labor available at no charge to ALL customers.	Under certain conditions, parts and labor available at no charge to ALL customers.	Per call to all non-Service Agreement customers. No charge for parts and labor to Service Agreement customers. Install as needed on IBM equipment.
Use assigned service code.	Use assigned service code.	Use applicable service code.

GENERAL

1 SERVICE INFORMATION (CEM 311) (9/76)

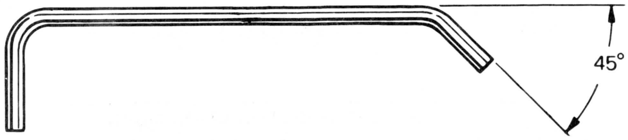
OPERATIONAL KEYBUTTONS - DAMAGE

It is possible to damage some of the operational keybuttons if the "Selectric" Typewriter is stored on its back. Caution should be exercised if this storing condition is used.

2 SERVICE INFORMATION (1/74)

FRONT FEED ROLL ADJUSTING SCREWS AND CYCLE CLUTCH COLLAR ACCESSIBILITY

For easy access to these two adjusting screws, form the no. 10 6-flute splined wrench (T10-17) as shown in the drawing. The wrench can be formed using a vice.



3 SERVICE INFORMATION (10/68)

COPPER COLORED SCREWS

Copper coloring of screws and/or nuts to indicate a left-hand thread is an industry standard.

4 SERVICE INFORMATION (10/68)

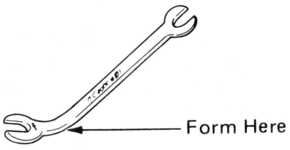
SMALL LOCKNUTS ONTO ADJUSTABLE SPLINED SCREWS

When replacing locknuts on splined adjusting screws, first insert the splined wrench into the head of the adjusting screw. Slide the locknut over the top of the wrench and down onto the screw. The locknut may then be turned onto the screw without the danger of losing it.

5 SERVICE INFORMATION (CEM 311) (9/76)

SKIRT CLEARANCE ADJUSTMENT - ACCESSIBILITY

The 7/32 - 3/16" thin wrench, (T05-12), may be formed to help access the lower adjusting nut (02-526), which should be loosened to make the skirt clearance adjustment (APM).



6 SAFETY

POWER CLEANER (CEM 90) (1/71)

Under full stalled conditions with power applied, it is possible for the power cleaner to start a fire. This condition must exist for more than five minutes for open flames to result.

Under no conditions is the power cleaner to be left on unattended or stalled with electrical power applied.

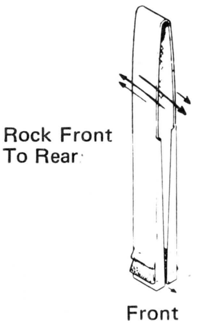
7 SERVICE INFORMATION (10/68)

KEYBUTTON REMOVAL TOOL USE

The keybutton removal tool, (T11-3), should be used as shown in the drawing. A drop of oil on the keylever, upright lug, will help in replacing the keybutton.

This should not be done in cases where loose keybuttons are a problem, i.e., automatic letter writing machine, etc.

Attach abrasive paper to the keybutton removal tool to prevent slippage. A contact glue can be used to stick the material to the handle.



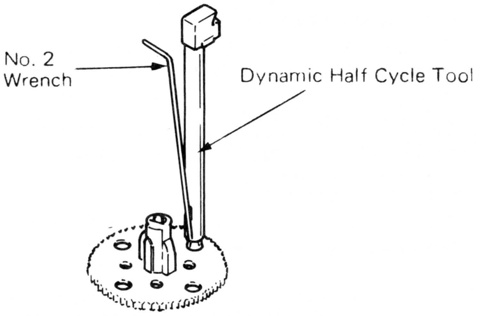
8 SERVICE INFORMATION (CEM 85) (5/78)

DYNAMIC HALF CYCLE TOOL

A cut-out slot has been added to the side of the dynamic half cycle tool (T21-3) near the socket end, for use on IBM Typewriters with the selective ribbon mechanism.

The purpose of the slot is to provide a way to insert the end of a splined wrench to turn the ribbon lift adjusting screw.

Adjustments Referenced: "Selectric" APM F/N 241-5939, Lift Height Adjustment.



To make the above adjustments, use the 3/16" socket end of the dynamic half cycle tool to loosen the locking nut, then insert the end of the No. 2 splined wrench, (T11-21) through the slot on the side of the tool to turn the ribbon lift height adjusting screw.

9 SERVICE INFORMATION (CEM 92) (9/78)

TILT DETENT ADJUSTING WRENCH

Availability and proper use of the tilt detent wrench.

The tilt detent wrench (T05-6) is designed to make the adjustment of tilt detent on all "Selectric" Typewriters easier.

ADJUSTMENT: "Selectric" APM F/N 241-5939, Tilt Detent Frame.

Use the small, 1/8" socket end of the wrench to loosen the locking nut (Figure 1) (02-317) on the guide screw (02-316), then insert the No. 2 splined wrench through the hole in the socket (Figure 1) and adjust the guide screw for the proper tilt detent side play. Lock the nut (Figure 2). Use the 3/16" open end of the wrench on the tilt detent pivot screw locking nut (02-315).

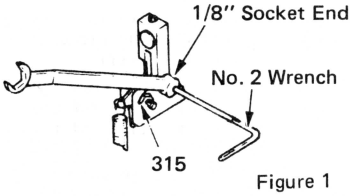


Figure 1

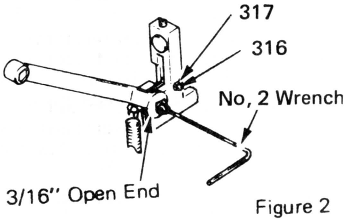


Figure 2

10 SAFETY

BRITTLE SPLINED WRENCHES, No. 2, 6 FLUTE (P/N 9900216) (CEM 114) (9/71)

Some splined wrenches have been reported to be brittle due to manufacturing defect. These wrenches may break when torque is applied.

These wrenches can be identified by a light rusty color and have a dry appearance. The replacement wrenches are black in color and have a light oil coating.

APPLICATIONS

1 SERVICE INFORMATION (10/68)

TYPE ELEMENT - ORATOR

The Orator and Orator Language Arts elements are designed basically for speech-writing applications. They are recommended for single copy work only because of the size of the characters. Interference printing may occur on multiple copy work.

This type style is not recommended for manifolding, stencil, offset or spirit masters. It is also not recommended for correcting applications.

2 SERVICE INFORMATION (10/68)

TYPE ELEMENT - DUAL GOTHIC 72

This typestyle is subject to cutting or embossing and is **not** recommended for use where embossing could be a problem.

3 SERVICE INFORMATION (10/68)

TYPE ELEMENT - OPTICAL SCANNING, 1428

Machines using the 1428 Optical Scanning type element continuously should have the low velocity vane lug for position No. 42 removed. The "$" used in that position requires high velocity selection, and an inhibitor mechanism was provided for that purpose.

Removal of the No. 42 lug will permit the inhibitor to be removed. Except for the No. 42, all other low velocity positions will operate as designed, providing increased platen life, since punctuation marks will no longer indent the platen surface to cause voids in character coverage.

Removal of the No. 42 lug is performed as follows: Remove the inhibitor selector lever and switch lever. Remove the carrier return keybutton. Lock down the shift keys. Reach through the open area to break off the exposed No. 42 lug with a T-bender or similar tool. Reassemble and check functions. If desired, the low velocity selector lever, link, bellcrank and spring may be removed to remove the need for operator control.

Note: These instructions do **not** apply to machines using the keypunch trainer OCR element, Farrington Scanner element, or 915 element.

4 SERVICE INFORMATION (CEM 178) (9/72)

BOOKFACE ACADEMIC AND PRESTIGE PICA ELEMENTS - NO GUIDE SLOT

88 character Prestige Pica and Bookface Academic elements do not have a guide slot and they will not fit on machines manufactured before September 1, 1972.

Existing machines may be changed to accept the elements by installing a spring biased tilt ring assembly (2-335).

BACKSPACE

5 SERVICE INFORMATION (10/68)

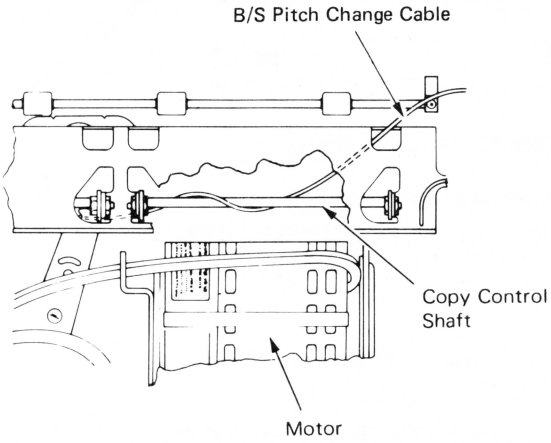
CAM PAWL WEAR

Sound Test: Hold the carrier and operate repeat backspace. Worn pawls will slip on the cam ratchet and can be heard immediately.

6 SAFETY

BACKSPACE PITCH CHANGE CABLE ROUTING (CEM 212) (8/73)

Backspace Pitch Change Cable Placement - Dual Pitch: The pitch change cable must not touch the motor to meet double insulation standards. Place the cable as shown.

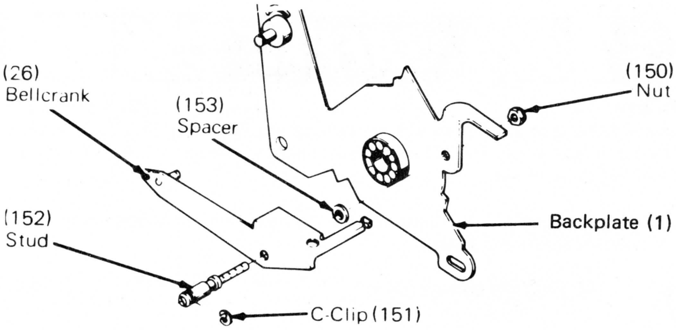


7 SERVICE INFORMATION (CEM 185) (10/72)

ROTARY BACKSPACE BELLCRANK STUD

Field Fix: When experiencing backspace failures due to broken bellcrank mounting stud, the following field fix may be used.

1. Remove bellcrank mounting stud from backplate by hitting lightly.
2. Remove grip clip from stud and remove stud from bellcrank.
3. Insert new stud (24-152) in bellcrank with threaded part to rear.
4. Install "C"-clip on front of stud and washer over threaded end.
5. Install stud through hole in backplate and tighten with nut.



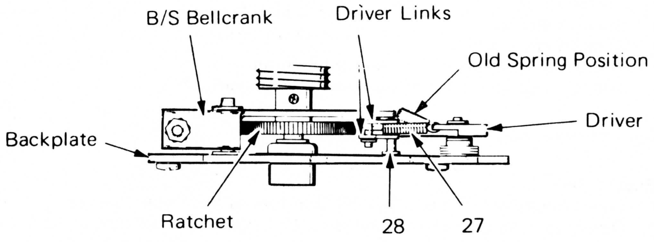
1 RELIABILITY (CEM 293) (7/75)

ROTARY BACKSPACE DRUM WEAR

Redesigned Parts: To stop excessive wear and breaking of ratchet teeth (24-6) due to incorrect alignment of the driver (24-32).

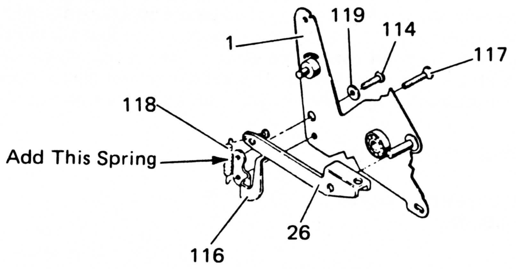
A redesigned stud and spring are available and can be installed on any "Selectric" rotary backspace mechanism. The stud replaces stud (24-28) and is installed from the rear of the machine through the driver and lower driver link hole. The stud operates against the back plate (24-1). The spring replaces spring (24-27). Install the small loop end of the driver and the long loop end to the driver link mounting stud between the two links (24-29). DO NOT INSTALL THE SPRING IN B/S BELLCRANK HOLE.

Ensure driver to ratchet clearance is .030"-.040" (0,76-1,02 mm). Apply a thin film of No. 23 grease on the back plate where the stud contacts.



(Top View)

On machines below approximate S/N: 8X3 — 1514000 and 8X5 — 2806000 it may be necessary to add a spring (24-118) as shown below. It will be necessary to replace backplate mounting screw (24-117) to anchor this spring.



Recovery Code
Expired 8-15-76

2 SERVICE INFORMATION (CEM 311) (3/76)

ROTARY BACKSPACE DRUM - SERVICE TIP

The rotary B/S drum and ratchet asm. (24-6) can be removed through the hole in the bottom of the frame by removing the B/S bellcrank upstop (24-116) and the C/R shoe mounting bracket (03-500). This removes the need to remove the B/S plate (24-1) when changing the ratchet and drum asm. (This procedure will not work on machines manufactured before dual transport system.)

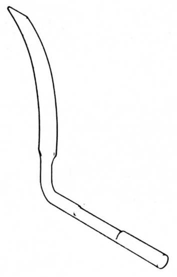
3 SERVICE INFORMATION (CEM 202) (4/73)

INTERLOCK SHAFT

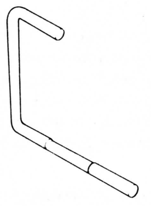
Redesigned - "Selectric" II: The index to backspace interlock shaft (24-20) for RB/S "Selectric" II Typewriters has been redesigned to remove a binding condition.

An index during normal backspace operation will occur when interlock fails to operate.

Replace the interlock with new level part. Part number remains the same.



Old Level



New Level

4 SERVICE INFORMATION (CEM 188) (11/72)

DRIVE LINK SPACER

Drive Link Spacer - Removed - (RB/S): Drive link spacer (24-33) has been removed to prevent a bind between the backspace bellcrank and the driver links. If this condition is present, remove the spacer.

5 SERVICE INFORMATION (CEM 272) (1/76)

HALF BACKSPACE - REDESIGNED - LEVEL 3

To relieve a "bias" torque on the escapement rack, a torsion spring (07-48) now replaces the compression spring (07-103). The cam and lever angles (07-107 & 106) have also been changed to reduce breakage. This was a level 2 redesign.

The new spring mounts on the left side escapement torque bar backup stud (07-13) and a notch cut in the escapement rack (07-10). This notch makes this level rack incompatible with earlier racks, so when changing over to this new level it will be necessary to change both the rack and the spring. The same is true for the cam and lever; they must both be changed when either is changed on level 1 machines. Cam and lever are level 2.

The escapement rack pitch selection gear (07-23) has also been redesigned with a longer stop lug. This eliminates the need for the stop spacer (07-108). When installing this new style gear, it will be necessary to remove the spacer.

Note: If level 3 control bracket (07-20) part number 1206847 is used, it will be necessary to use the entire torsion spring level half-backspace mechanism.

The earlier level 2 bracket (07-20) part number 1204505 will work with the torsion or compression spring levels.

6 SERVICE INFORMATION (CEM 302) (11/75)

BACKSPACE CAM FOLLOWER (NRB/S) - REDESIGNED

To provide a stronger backspace on NRB/S machines, the side frames of the backspace cam follower have been redesigned (Figure 1).

SYMPTOM: The backspace mechanism may allow enough flexing of its components to cause loss of motion to the backspace rack, resulting in a stuttering or unreliable backspace operation.

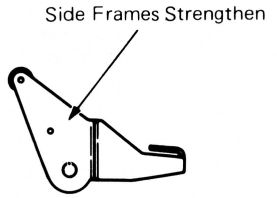


Figure 1

Install the new backspace cam follower with stronger side frames (25-202).

Plant installed above approx. S/N: 7X1-304000, 8X3-1520000 and 8X5-2825000.

1 SERVICE INFORMATION (CEM 321) (9/76)

"SELECTRIC" II 8X3 - 9 PITCH

The "Selectric" II is now available in 9 pitch. It uses the rotary backspace, and all backspace adjustments remain the same as the dual pitch machine, except for the switch pitch backspace cam (24-35) which is replaced by a nonadjustable stop. Also, the backspace motion should be adjusted to level 2 specifications. The escapement bracket is the same as the "Selectric", if dual pitch. Not recommended for field installation.

2 SERVICE INFORMATION (CEM 458) (7/81)

ROTARY BACKSPACE BELLCRANK STOP - LEVEL 1 FIELD FIX

The backspace bellcrank downstop (24-116) can be installed on a machine with all steel transport when the bellcrank upstop lug on the Level 1 backplate is weak or broken.

PROCEDURE:
1. Remove two L-1 backplate mounting screws (24-14 and 24-113).
2. Using a No. 22 bit (T16-5), drill the threads out of the holes in the power frame from which the screws were removed.
3. Install the bellcrank downstop as shown in Figure 1 with two screws (24-114 and 24-117) and one washer (24-119). Use Level 2 adjustments to check backspace motion.

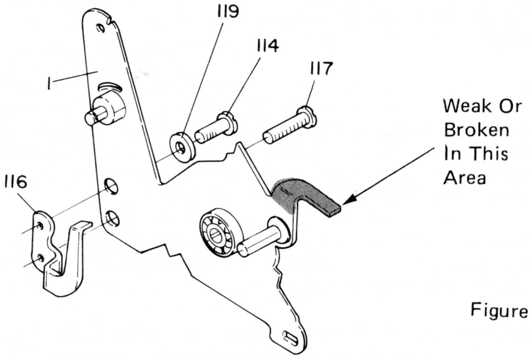


Figure 1

CARRIER & ROCKER

3 SERVICE INFORMATION (10/68) (5/80)

IMPRESSION VARIATIONS - BROKEN PRINT CAM FOLLOWER

Uneven, blurred impression and uneven, smeared underscore may result from a broken print cam follower. (Follower roller mounting pin breaks on LH side.)

Replacement procedure for the print cam follower (ref. 02-205):

1. Remove screws in dual impression transport bracket (26-55). Disconnect rocker return spring and move carrier away from bracket.
2. Remove tape lift assembly (26-71) (correcting only).
3. Remove platen.
4. Remove element.
5. Remove cardholder.
6. Tilt rocker asm. up and to rear of machine.
7. The "C"-clip and follower can now be removed.

Reverse the procedure for reinstallation.

Ensure that:
1. Lug on impression lever (02-222) is in fork of print cam follower.
2. Detent actuating lever (02-524) is to left of detent cam follower (02-501).
3. Print cam follower roller is between fork of follower yoke (02-210).

4 SERVICE INFORMATION (10/68)

SKIRT CLEARANCE - LOSS OF

End play of the print sleeve should be checked before adjusting a "Selectric" Typewriter for proper skirt clearance. It has been found that some carrier bearings may have burrs on their sides which, when worn off, can allow excessive end play in the print sleeve. This excessive end play allows the detent cam to move to the right, and results in less skirt clearance.

5 SERVICE INFORMATION (10/68)

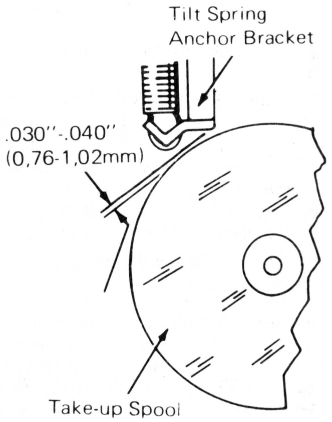
LIGHT CHARACTERS - FABRIC AND FILM RIBBON

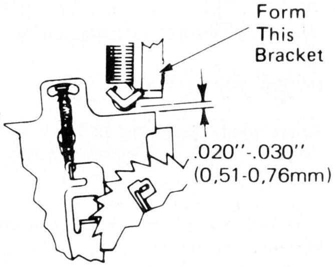
On some machines using the film ribbon mechanism, interference between the tilt spring anchor bracket and the ribbon take-up spool flange has been experienced. The symptoms of this interference may be:

1. Broken tilt or rotate tape.
2. Differences in print quality.
3. Damage to the ribbon take-up spool.

This problem may be corrected by forming the spring anchor bracket to the rear to clear the take-up spool.

Intermittent light characters on fabric ribbon machines may be caused by interference between the tilt pulley bellcrank spring anchor and the ribbon feed and reverse plate when the plate is positioned to feed the right-hand spool. This interference occurs just before print. Form the spring anchor to provide enough clearance.





6 SERVICE INFORMATION (CEM 222) (10/73)

TILT 3 CHARACTERS TOO LOW

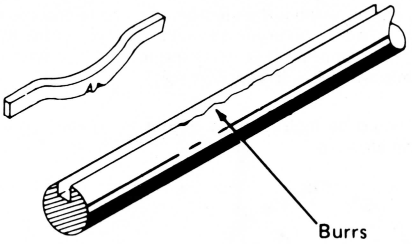
Some machines may have reached the field with yokes (02-520) being out of specification. The rotate detent nut (02-410) hits the yoke when a tilt 3 character is selected. If experiencing this problem, remove enough of the yoke at the point of contact to allow proper tilt detenting.
NOTE: The material is soft enough so that a file may be used.

1

SERVICE INFORMATION (10/68)

PRINT AND ESCAPEMENT FAILURES

Burrs on the print shaft can often be caused by a defective or worn key. This condition can cause escapement and/or print failures.



2

SERVICE INFORMATION (CEM 195) (3/73)

ROTATE ALIGNMENT CHANGES

When it is hard to make and/or maintain coarse rotate alignment, check:

1. Key for bottoming out in rotate pulley before tightening on lower ball socket (change key) (02-422).
2. Loose pin in lower ball socket (02-415).
3. Setscrew in rotate pulley hitting against lower ball socket shaft instead of key (change rotate pulley) (02-420).
4. Excessive head play caused by too much slot width of ball joint (02-414).
5. Wear in the lower ball socket in the yoke (02-520).

3

RELIABILITY (CEM 223) (10/73)

EXCESSIVE HEAD PLAY

Excessive head play may be caused by contaminated ball joints (02-414).

Replace the ball joint, lower ball socket, tilt ring and tilt ring pins (bullets).

Recovery Code
Expired 5-1-76

4

SERVICE INFORMATION (10/68)

TILT RING SHIM CENTERING-SERVICE TIP

1. Slightly loosen the screws which hold the tilt ring spacer.
2. Insert the 6-fluted, no. 6 splined wrench (T10-19) into the notch and run it completely around the ball socket. It should pass wihtout binding at any point.
3. With the wrench at the front, tighten the front screw; with the wrench at the rear, tighten the rear screw.

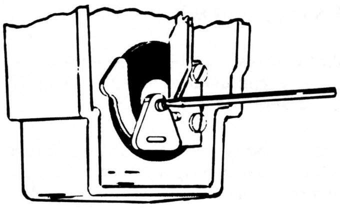
This technique does a better job of centering that the old way using the typing element.

5

SERVICE INFORMATION (10/68)

ROTATE PULLEY SETSCREWS STRIPPED-SERVICE TIP

The lower ball socket can be removed if the rotate pulley setscrew is stripped in the pulley by removing the tilt ring assembly and by taking a fulcrum wire and lightly hitting the lower ball socket out through the top of the yoke. Remove the rotate spring and take the pulley out of the bottom of the carrier.

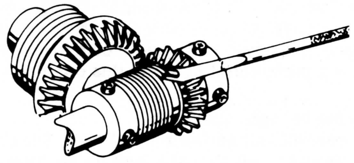


6

SERVICE INFORMATION (10-68)

MOVING CARRIER WITH MACHINE HALF-CYCLED

The carrier can be moved with the machine half-cycled without changing the half-cycle position. To do this, push the tip of the RH loop of the tab governor spring toward the rear after latching our the tab lever. This will allow the carrier to move to the right.

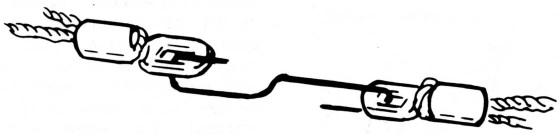


7

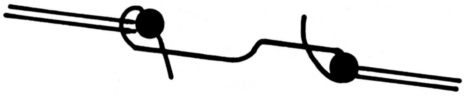
SERVICE INFORMATION (CEM 311) (3/76)

CARRIER REPLACEMENT - SERVICE TIP

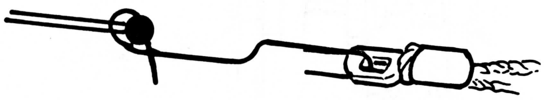
A paper clip can be used to hook the C/R and tab cords or cables together when replacing the carrier on "Selectric" Typewriters. This keeps the cords out of the way during carrier replacement and helps to reinstall them.



Nylon Cords



All Steel Transport



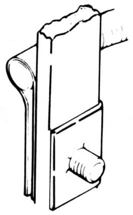
Dual Transport

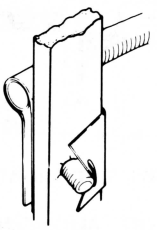
8

SERVICE INFORMATION (CEM 209) (6/73)

DUAL VELOCITY CABLE CLIP - INSTALLED WRONG

Some "Selectric" Typewriters may have the dual velocity cable clip (02-214) incorrectly mounted on the carrier. The screw may be at an angle and not in the threaded part of the clip. If experiencing problems with dual velocity, check this screw. The screw should be removed and properly reinstalled.





1 SERVICE INFORMATION (CEM 315) (4/76)

CORRECTING TAPE LIFT - LOST MOTION

If all adjustments are correct, but still unable to get enough tape lift motion for proper correction or lift guides stick in the lift position, check the left-hand carrier bearing (02-120).

Remove left-hand wiper retainer (02-48) and wiper (02-50); check left-hand carrier bearing. Bearing should be flush with the carrier casting. If bearing extends out of the casting, it is possible for the lift cam follower to slip off the lift cam. Use the following procedure to correct this condition.

1. Move the carrier to the far right position.
2. Remove print shaft gear (02-40) and retainer (02-51). Slide the print shaft to the right until it clears the left side of power frame; then remove wiper (02-50) and retainer (02-48); turn print shaft gear around (Figure 1); install on print shaft and tighten both screws (02-41).
3. Loosen ribbon lift cam screw (26-112) and print cam screw (02-203).
4. Use print shaft gear to drive bearing into carrier casting by sliding the print shaft to the right. Repeat this until the bearing is driven flush with left side of the carrier casting.
   CAUTION: Do not apply too much force as this may drive the bearing in too far (Figure 1).

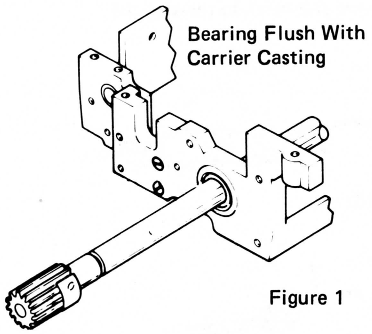


Figure 1

This procedure will work only if the bearing was not fully inserted in the carrier casting. If the bearing is loose (oversized casting hole), the bearing will not stay in position if reinserted and carrier replacement is recommended. This procedure does not apply to the early level (smooth outer diameter) carrier bearings.

5. Adjust the ribbon lift cam and print cam (Figure 2).
   NOTE: Check detent cam adjustment.

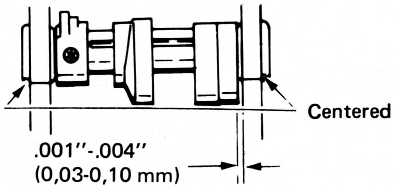


Figure 2

6. Replace all parts and adjust print shaft end play and fine timing (Figure 3).

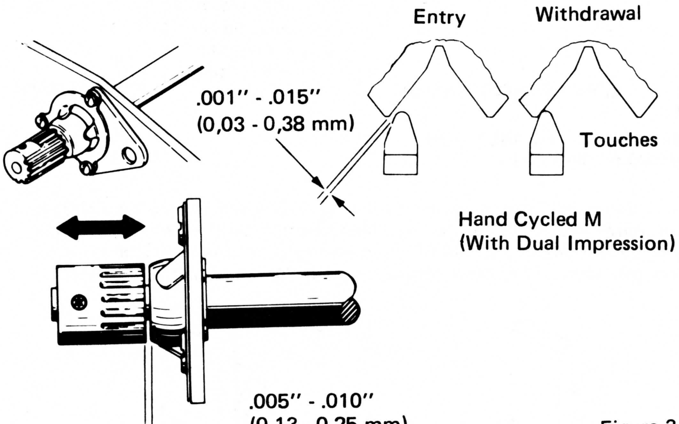


Figure 3

2 SERVICE INFORMATION (10/68)

TYPE ELEMENT - ALIGNMENT CHECK

Type the word CHRONEX in both upper and lowercase to make sure that all slides (character sections) in any 88 character U.S. correspondence typing element are correctly positioned. The word DOMICILE will test positioning on 96 character U.S. correspondence elements on all slides except two. These slides contain numbers and symbols only. This information should be of value when installing a new typing element or diagnosing a malselection.

3 SERVICE INFORMATION (CEM 329) (12/76)

TYPE ELEMENT BREAKAGE - TEETH

Broken teeth in the area of the lever pivot can be caused by not fully detenting the lever before the element is lifted off the tilt ring. As the type element is lifted, the lever spring rotates the element (Figure 1) and the teeth strike the upper ball socket. This could break a tooth in the area of the hyphen (-) or the uppercase "G", (88 character U.S. correspondence); or the hyphen (-) or the comma (96 character U.S. correspondence).

All operators should be instructed to detent the lever in the open position before lifting the element.

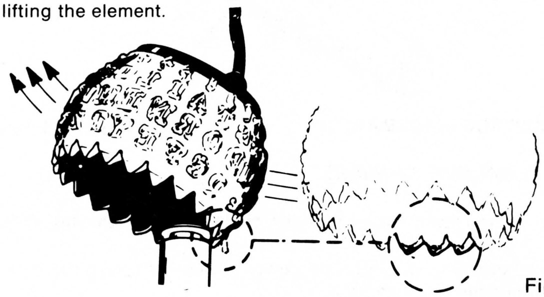


Figure 1

4 RELIABILITY (CEM 192) (1/73)

UNDERPRINTING - BOOKFACE ACADEMIC AND PRESTIGE PICA

If a dot appears on the typed page below the capital and lowercase "t" and cannot be adjusted out, it is caused by the fractions being too large.

Replace type element with new one. The fractions on elements manufactured after October 2, 1972 are smaller. This applies only to the listed typestyles. Part numbers remain the same.

Type Elements

1167158	Bookface Academic - 101
1167123	Prestige Pica - 101
1167182	Prestige Pica Legal Fraction

**Recovery Code
Expired 1-31-74**

5 SERVICE INFORMATION (10/68)

TYPE ELEMENT DAMAGE - PLATING

Type Element - Plating Damage (02-180): Excessive heat can cause "bubbling and blistering" of type element plating. Storage areas for "Selectric" Typewriter elements must be selected with care. Elements which are heated above 140° F. (60° C.) may be damaged. Areas of exposure:

1. Automobile trunks and the area near the windshield or rear window during the summer.
2. Near a heating outlet or steam radiator.
3. In the CE service case near the power cleaner.
4. Machines used in an enclosure.

6 RELIABILITY (CEM 76) (11/70)

TYPE ELEMENT - LATCH SPRING BREAKAGE

Latch springs may break on some type elements manufactured between June 20 and Septemebr 29, 1970.

Type elements with a dull zinc finish latch spring may have this problem. Type element springs with a bright nickel finish are not subject to breakage.

Some problems which can be caused by a broken latch spring are:

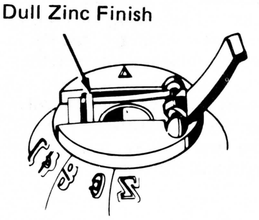


Figure 1

1. Element cannot be removed by the operator.
2. Print quality (alignment or impression) may be affected.
3. Uneven underscore.

**Recovery Code
Expired 11-4-71**

1 SERVICE INFORMATION (CEM 156) (4/72)

TYPE ELEMENT LUBRICATION

Every element should be lubricated with a light film of No. 23 grease in two areas.

1. Lever pivots.
2. Inner surface that is contacted by the tilt ring back-up shoe - only on "Selectric" Typewriter and I/O.

If an element lever should bind shut, a drop of oil at each of the lever pivot points will remove the bind.

Since some customers clean their elements in a way that removes all lubrication, check each typehead. Operators should be instructed NOT to wash their elements as this removes the lubrication.

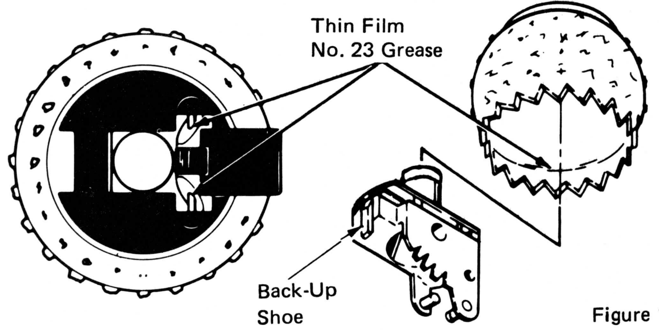


Figure 1

2 SERVICE INFORMATION (CEM 317) (4/76)

TILT RING PIVOT SCREWS - HEX HEAD

The tilt ring pivot (bullet) screws (02-302) are now hex head screws to make removals easier. The top of the yoke, where the screw mounts, has been removed to compensate for the additional thickness of the screw head (Figure 1). The new style can be identified by a flat surface on the top of the yoke instead of a rounded surface. This hex head screw cannot be installed on old level yokes. If necessary, the old splined screw (P/N 1123828) may be used on new level.

The P/N for the yoke will remain the same.

Caution: Do not overtighten.

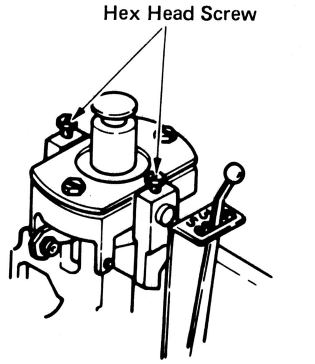


Figure 1

3 SERVICE INFORMATION (CEM 320) (9/76)

CARRIER BUFFER - FIELD INSTALL

A carrier buffer is available to aid in stabilizing the carrier when excessive play exists between the print sleeve and print shaft.

If experiencing problems related to excessive carrier motion left-to-right, i.e., incomplete lift off, escapement failures, character alignment, print quality, overbank, etc., install carrier buffer (02-015) on right side of carrier (Figure 1).

Adjust buffer to clear escapement rail by .001" at closest point.

The addition of the buffers should be done only after all related adjustments are checked and should not be installed instead of replacing worn parts.

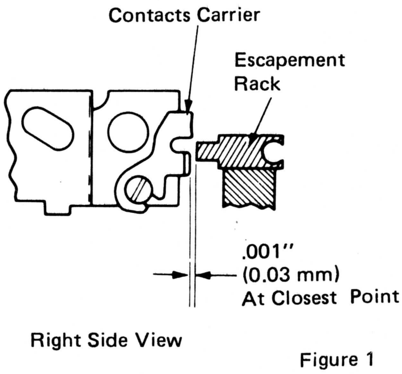


Figure 1

4 SERVICE INFORMATION (CEM 342) (2/79) (CEM 470) (10/81)

PRINT QUALITY - PLATEN HEIGHT ADJUSTMENT

If the platen cannot be adjusted low enough to get even top and bottom print, check the platen height adjustment with the platen gauge. With gauge installed and the platen adjusted for .030" (0,76 mm) clearance between the top of the platen and platen gauge, the platen should need only slight adjustment to get even top and bottom. If the platen height eccentrics require excessive adjustment downward for even top and bottom print, the yoke (02-520) could be the problem. The tilt dentent slot may be off location.

Check to be sure that related adjustments such as platen front to rear, platen latches, and carrier shoe are not contributing to the problem.

If the platen height eccentrics do not provide sufficient adjustment range, one of the following corrective actions may be used.

"Selectric" and "Selectric" II prior to eccentric overthrow index pawl stop: **replace the yoke.**

"Selectric" and "Selectric" II with eccentric overthrow: Install B/M 1279505. This B/M includes new LH and RH platen supports (22-280, 291) which have been modified to allow the platen to be adjusted lower. The parts are color coded a gold tone for identification. Individual P/Ns for the LH and RH supports will not be made available. If replacement of the supports does not solve the problem, the yoke must be replaced.

"Selectric" III: **Replace the yoke** (02-520) (platen supports are not available as separate parts on "Selectric" IIIs).

If yoke replacement is required, check print adjustments, fine alignment, and character selection adjustments, with emphasis on even side-to-side printing, skirt clearance, and homing. Also make sure that the carrier does not contact the feed rolls during carrier movement.

5 RELIABILITY (CEM 367) (7/78)

BALL JOINT - OUT OF SPEC.

Some machines have reached the field with the ball joint (02-414) machined too short on one end and/or the slots cut in an "X" pattern on one end.

When experiencing malselection or rotate problems and all adjustments appear correct, check the ball joint.

Change ball joint if defective.

S/N: 7X1 - 0734400—0743100, 8X3 - 1874200—1904200, 8X5 - 3577300—3648600.

Recovery Code
Expired 7-12-79

6 SERVICE INFORMATION (CEM 396) (8/79)

VELOCITY LEVER ASM. - REDESIGNED

An opening has been added to the upper portion of the velocity lever bracket.

On machines with the new level assemblies, parts can be replaced individually.

Old level assemblies will not be available when current stock is depleted. When replacing old level assemblies it is necessary to order both individual parts.

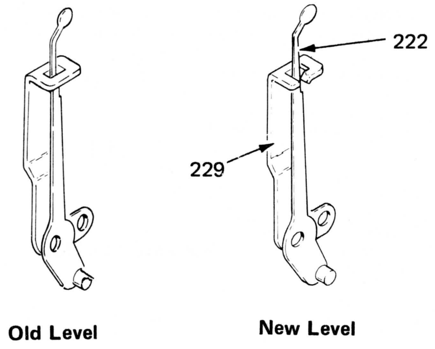


Figure 1

1 SERVICE INFORMATION (CEM 398) (9/79)

CARRIER REPLACEMENT - SERVICE TIP

Carrier replacement time can be reduced by leaving the transport cords and velocity cable attached to the original velocity bracket. If the velocity bracket (02-211, 24-41 or 26-55) does not require replacement, it may be removed from the old carrier and installed on the new one without disconnecting transport cords or velocity cable.

1. Remove two screws (02-212, 24-49 or 26-115) securing velocity bracket (02-211, 24-41 or 26-55) to carrier, leaving cords and velocity cable attached.
2. Remove the carrier.
3. Remove velocity bracket from new carrier.
4. Install carrier.
5. Reattach original velocity bracket. **Ensure** that the DI follower yoke (03-210) is properly positioned over the print cam follower roller (02-205).

Note: Yoke mounting stud (02-220) is free to move left-right. Use of scissor clamps or other means is advisable to prevent stud movement during carrier change and reinstallation.

2 SERVICE INFORMATION (CEM 440) (9/80)

CABLE GUIDE - REDESIGNED

The velocity cable guide (02-217) located on the left-hand side of the carrier has been redesigned. The guide is now installed by hooking it over the carrier casting instead of it being held in place by the retainer (02-49) (Figure 1).

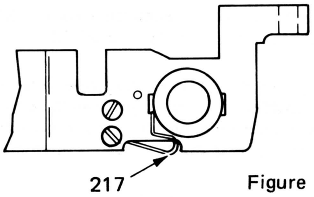


Figure 1

3 SERVICE INFORMATION (9/80)

DETENT CAM - LEFT-TO-RIGHT ADJUSTMENT

When making the left-to-right adjustment of the detent cam (02-505), the following procedure is helpful:

1. Remove the element.
2. Loosen both setscrews in the detent cam.
3. Hand cycle the machine until the detent cam follower (02-501) is in the low area of the detent cam.
4. Adjust the cam left-to-right for .001"-.010" clearance between the detent cam follower and detent actuation lever.
5. Push detent cam follower to left to clear the detent cam.
6. While holding the detent cam follower to the left, hand cycle the machine until you can tighten the setscrews.
7. After tightening the screws, check adjustment.

4 SERVICE INFORMATION (CEM 443) (11/80)

TILT RINGS - ASSEMBLED INCORRECTLY

There is a possibility of tilt rings (02-333,335) assembled with incorrect tilt ring bases (02-300). 96 character and 88 character tilt ring bases are not interchangeable. There is a difference in the angle and position of the tilt detent teeth.

If experiencing vertical alignment problems, check the tilt ring base. 96 character tilt ring bases have a small notch to the rear of the zero tilt tooth, (Figure 1). 88 character tilt ring bases have no notch in this location.

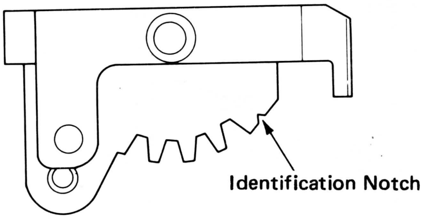


Figure 1

Early production 96 character tilt ring bases have a black oxide finish, as do the 88 character bases. Current production 96 character bases are copper colored to aid in identification and elimination of the asm. problem.

If this condition is encountered, replace the tilt ring.

Check field stock of tilt rings, and return any which are incorrectly assembled as NEW DEFECTIVE.

CARRIER RETURN

1 SERVICE INFORMATION (10/68)

CORD WEAR - CARRIER RETURN

Some carrier return cord wear may be caused by the rotate tape contacting the cord between the left-hand front and rear cord pulleys. If this condition is found, place washer, P/N 1090790, under the left-hand front cord pulley (03-336) to allow enough clearance between the cord and the rotate tape.

2 SERVICE INFORMATION (CEM 241) (1/74)

EXCESSIVE SHOE CLEARANCE

When carrier return failures are caused by excessive shoe clearance, check that the clip (03-507) is fully bottomed on the actuating arm (03-508) before readjusting.

3 SERVICE INFORMATION (10/68)

PARTIAL CARRIER RETURN - TORQUE BAR CLIP

Partial carrier return can be caused by the rotational position of the escapement torque bar clip (06-33), allowing it to interfere with the carrier return keeper. In some cases the latch keeper may bind off on the bottom of the detent arm (20-460).

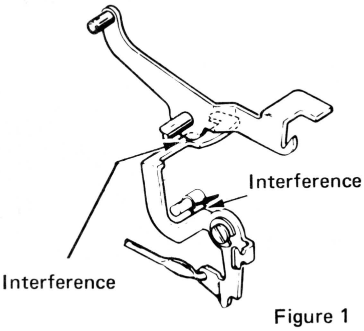


Figure 1

4 SERVICE INFORMATION (CEM 60) (7/70)

LATCH OVERTHROW

To ensure proper overthrow, install platen in machine when checking or making the carrier return latch overthrow adjustment.

5 SERVICE INFORMATION (10/68) (CEM 311) (3/76)

PARTIAL CARRIER RETURN

Complete carrier return failures and some partial return failures can sometimes be traced to operation of spacebar and return at the same time (e.g., at the end of a typed line).

The condition occurs because the spacebar cam follower operates the interposer restoring bail before the C/R operational latch can be positioned under the index cam follower.

This condition can be adjusted by cutting spring (P/N 0190341) to 3/4" (19,05 mm) length. Next, form each end as shown and install it between the C/R operational latch and the rear bottom edge of the spacebar cam follower.

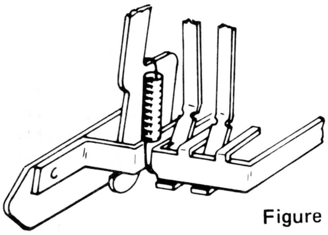


Figure 1

The spring should loosely span the distance between parts at rest, and should not interfere with vertical line spacing.

6 SERVICE INFORMATION (10/68)

UNLATCHING FAILURES

Failure to unlatch the carrier return can sometimes be caused by the RH margin release lever (09-67) and the LH margin release lever (09-64) not being adjusted properly. It is possible to block the margin rack movement to the left. If the 7X1 keylever (09-27) is bent, it could also give the same problem.

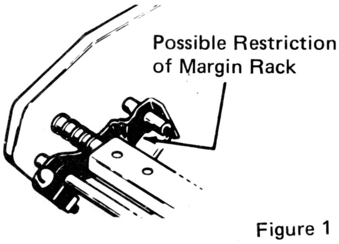


Figure 1

7 SERVICE INFORMATION (1/74)

SLOW OR UNEVEN RETURN

If experiencing slow or uneven carrier return on ealier level "Selectric" Typewriters with the cast carrier return lever (03-410), ensure that the setscrew (03-409) is tight. The setscrew can loosen slowly causing hard-to-diagnose problems.

8 RELIABILITY (CEM 308) (1/76)

SLOW OR UNEVEN RETURN

When experiencing slow or uneven C/R and normal adjustments (2 to 3 loop C/R shoe overlap and .010"-.025" [0,38-0,51 mm] shoe clearance), do not correct the condition; replace pinion gear (25-14). Some gears may not have the proper surface finish. Correct gears can be identified by a dull, dusty gray appearance over their whole surface. If slow or uneven condition exists after changing the pinion gear, the C/R actuating arm should be replaced with new level arm.

The torque limiter adjustment should be adjusted to the high side of the 1 to 2 lb. (0,454-0,907 kg) specification. Check the clamp (25-5) to ensure its mounting screw (25-8) is right and the clamp is fully bottomed on the clutch spring (25-9) (Figure 1).

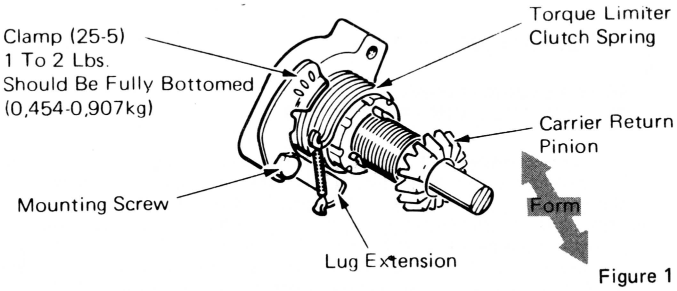


Figure 1

CAUTION: The spring lug extension may hit the carrier return shoe arm or the print interlock link when in full overthrow position. Form the tip of the spring lug down over the loop of the spring.

Recovery Code
Expired 10-30-76

9 SERVICE INFORMATION (CEM 88) (1/71)

PAWL CLEARANCE - LOSS OF

If experiencing a problem maintaining carrier return pawl clearance, check the escapement pawl mounting stud for wear at the point that contacts the escapement torque bar.

10 SERVICE INFORMATION (10/68)

SCRAPING NOISE ON RETURN - ESCAPEMENT TORQUE BAR

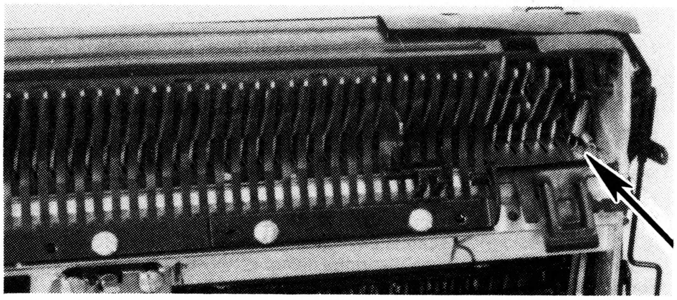
There are some cases where the lugs of the escapement and backspace pawls have burrs on them allowing the pawls to scratch into the escapement torque bar, moving it to the left and/or causing noise during carrier return. The pawls should be replaced or the lugs polished to stop the noise condition. A Model C feed roll clip on the left end of the torque bar inside the frame works well to prevent movement.

There are cases where the escapement torque bar is not parallel to the print shaft. This can be checked by observing the .001"-.002" (0,03-0,05 mm) clearance between the escapement torque bar and pawl mounting stud on the left, then the right side of the machine. The dowel pin can be removed from the mounting plate (06-54) to move the plate front-to-rear for proper adjustment.

1 SERVICE INFORMATION (10/68)

CARRIER RETURN - INDEX KEYLEVER PAWLS OVERLAPPING

On some early machines the carrier return keylever pawl may become overlapped with the index keylever pawl, thus making the carrier return inoperative. To prevent this, a shim (P/N 1077799) may be used to limit the downward travel of the carrier return keylever. Place the shim under the RH keylever guide comb screw and adjust so the C/R keylever just moves far enough to repeat.



2 SERVICE INFORMATION (CEM 316) (6/77)

CARRIER RETURN/EXPRESS BACKSPACE/SHOE ARM - REDESIGNED

The carrier return shoe arm has been redesigned to include a one-piece arm using the same shoe for carrier return and express backspace. The new arm is plant installed on "Selectric" and "Selectric" II & III Typewriters. The arm is field installable on all "Selectric" IIs by removing the express backspace arm and installing the new arm. On "Selectric" Typewriters the operational cam check pawl pivot shaft must be replaced with a "Selectric" II & III Typewriter shaft (25-220). The express backspace bellcrank lug is not used on "Selectric" Typewriters. Ensure lug does not interfere with operational keylevers on interposers.

1. Remove old style shoe bracket (03-500).
2. ("Selectric") Replace check pawl pivot shaft (25-220) with "Selectric" II & III shaft.
3. Install new arm and install C-clip (24-106). Connect arm extension in actuating arm spring (03-505) (Figure 1).
4. Install express backspace restoring spring to carrier return arm (Figure 1).

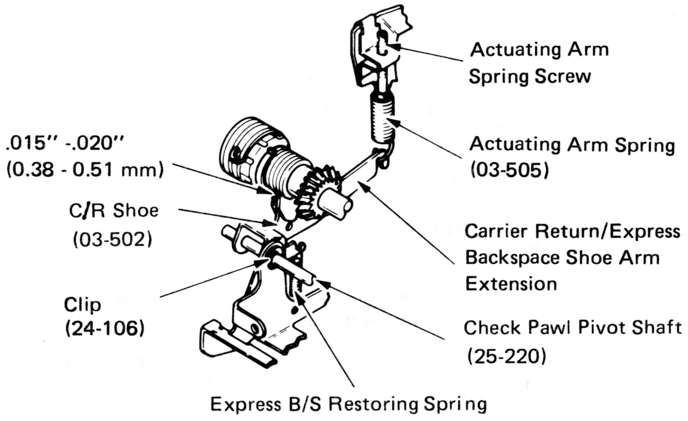

Actuating Arm Spring Screw
.015" -.020" (0.38 - 0.51 mm)
Actuating Arm Spring (03-505)
C/R Shoe (03-502)
Carrier Return/Express Backspace Shoe Arm Extension
Clip (24-106)
Check Pawl Pivot Shaft (25-220)
Express B/S Restoring Spring (24-104)

Figure 1

5. Install restoring spring (03-583) and clip as shown on NRB/S machines only (Figure 2).

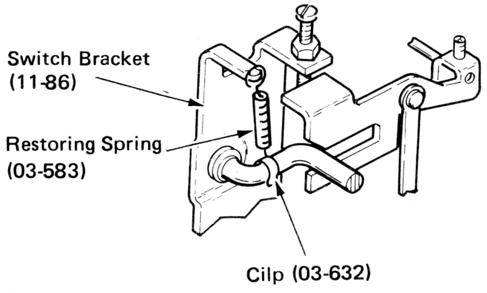


Figure 2

Adjustments

1. Form the arm as shown so the shoe overlaps 2 - 3 coils of the C/R clutch spring (Figure 3).
2. Check for interference between arm extension and interrupter link (03-625). Form extension if necessary.

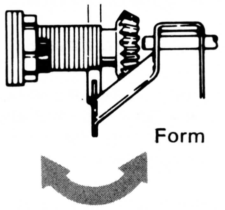


Figure 3

3. Adjust the actuating arm spring screw for .010"-.020" (0,25-0,51 mm) clearance between the C/R shoe and the C/R clutch with all parts at rest (Figure 1).
4. ("Selectric" II & III Typewriter) Form the express B/S bellcrank lug so the shoe engages the carrier return clutch spring when the keylever has traveled .035"-.050" (0,89-1,27 mm) from the top of the guide comb slot (Figure 4).

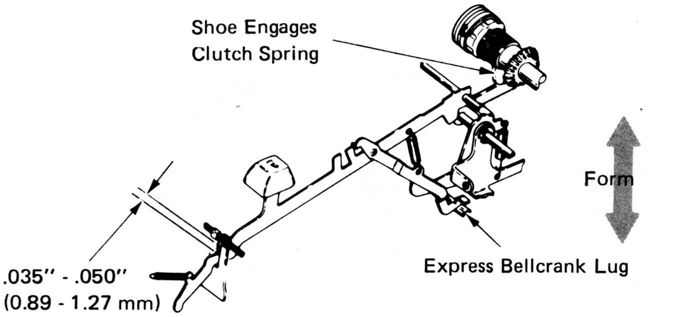


Figure 4

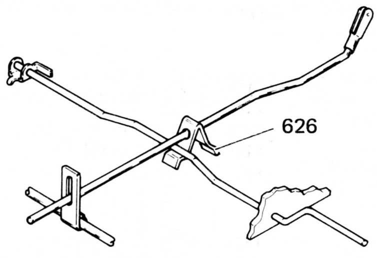
3 SERVICE INFORMATION (CEM 364) (5/78)

CARRIER RETURN INTERLOCK - REDESIGNED

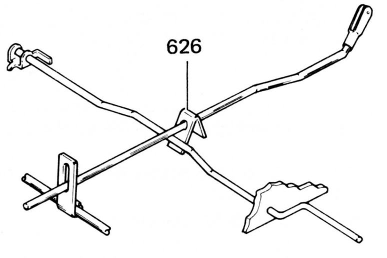
The C/R interlock clip (03-626) has been redesigned to eliminate possibility of rotating on the interlock link.

SYMPTOM: Keyboard locks while typing due to the clip rotating on the interlock link.

Install redesigned part. The part number and adjustments remain the same.



New



Old

1 SERVICE INFORMATION (CEM 392) (5/79)

CARRIER RETURN LATCH - REDESIGNED

Two additional holes have been added to the carrier return latch (03-207). One is an additional hole for the carrier return unlatching link (03-202) and the other is a hole to anchor the latch spring (03-205) (Figure 1).

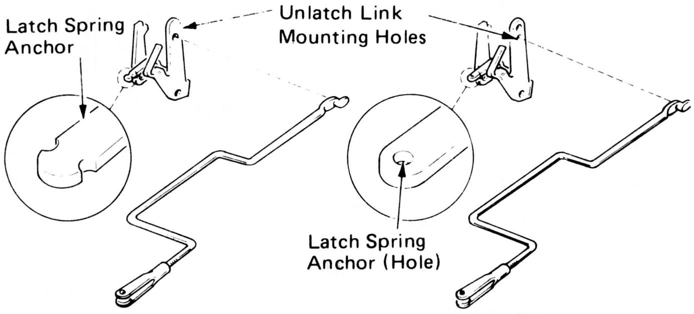


Figure 1

Machines with this level carrier return mechanism were produced with one hole for the carrier return unlatching link (03-202) and may not provide enough motion to reliably unlatch the carrier when adjustments appear correct. The latch spring (03-205) anchor lug could allow the spring to slide up the lug.

Replace the latch (03-207) and reconnect the unlatching link (03-202) in the lower hole and attach the latch spring to the hole in the anchor lug.

2 SERVICE INFORMATION (CEM 428) (7/80)

CARRIER RETURN - UNEVEN/SLOW/INTERMITTENT

Uneven or slow carrier return can be caused by failure of the carrier return shoe (03-502) to **fully engage** each of the last 2 to 3 coils on the right side of the pinion spring (25-13) (Figure 1).

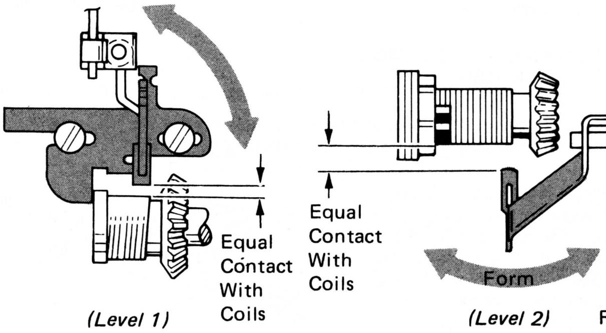


Figure 1

If the shoe is tilted to either side, so that greater pressure is applied to a single spring coil, increased wear will result on both the spring and on the return pinion (25-14) at that point. This leads to rapid loss of adjustment and need for parts replacement more often. It is important that the shoe NOT apply greater pressure to the inside coils as this prevents the remaining outside coils from driving.

If experiencing this problem, or when replacing parts in this area, check to ensure that the return shoe engages the coils of the return pinion spring evenly. When making the shoe overlap adjustment, be sure the shoe is not tilted and that shoe overlap does not exceed 3 coils. Best results will be achieved with 2 to 2 1/2 coil overlap.

3 SERVICE INFORMATION (CEM 451) (3/81)

CARRIER RETURN UNLATCHING LINK - INTERFERENCE

The carrier return unlatching link may bind on shift brake (16-208), print shaft mounting bracket screw (02-37), or transport pulley and bracket assembly (18-130).

This interference can cause failure of carrier return to latch reliably (partial carrier return).

Form the unlatching link with duckbill pliers or other suitable tool to remove the interference.

4 RELIABILITY (CEM 210) (7/73) (CEM 247) (3/74)

CARRIER BINDS TAB OR SPACEBAR - TAPE FEED CAM REDESIGNED

Carrier binds during tab or spacebar operations may be caused by tape feed cam follower positioned just off the high dwell of the feed cam (Figure 1). Cam follower position should be observed with the machine at rest and the print shaft rotated top-to-rear as far as possible. Binds are caused by rotational pressure on the right end of the print sleeve key against the keyway. Fine adjust rotate homing and timing.
NOTE: Gear train backlash and cycle clutch overthrow must be correct.

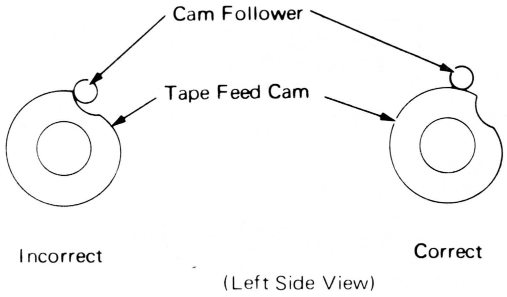


Figure 1

The correcting tape feed cam has been redesigned to provide a longer dwell on high point of cam (26-50) to prevent follower roller (26-45) from falling into notch of cam.

If above adjustments will not correct, replace old level cam (26-50) with new level.

Plant installed above S/N: 8X5 - 2322160 and 8X3 - 1241822.

Recovery Code
Expired 3-15-75

CORRECTING

1 RELIABILITY (CEM 237) (1/74)

CORRECTION TAPE - CONTINUOUS FEED

Some machines may have reached the field with a soft stud that mounts the roller on the tape feed follower (26-45). This will cause loss of motion and will not allow the follower to latch up. This will result in continuous tape feed. If this occurs and normal adjustments will not correct it, the follower bracket (26-45) should be replaced.

Recovery Code Expired 2-1-75

2 SERVICE INFORMATION (CEM 210) (7/73)

CORRECTION TAPE - INTERMITTENT FEED FAILURES

Intermittent correction tape feed failures may be caused by the tape load lever (26-15) hitting the tape feed pawl arm (26-4). This may be corrected by forming the tape load lever (Figure 2).

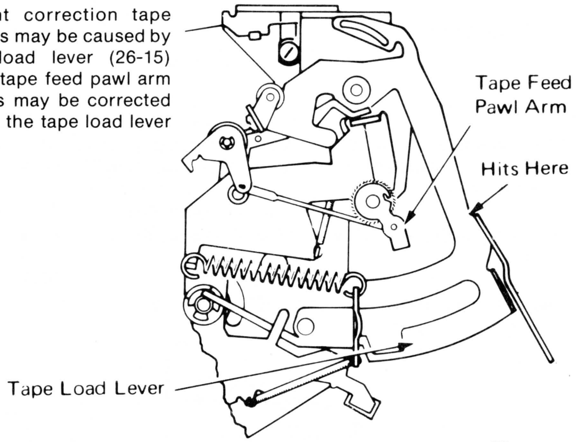


Figure 1

3 SERVICE INFORMATION (CEM 210) (7/73)

INCOMPLETE LIFT-OFF

Traces of the incorrect character remaining following a correction operation may be caused by the tape feed cam inhibitor (26-53) not functioning. The cam follower should not be on the tape feed cam when the element is moving toward the platen.

4 SERVICE INFORMATION (CEM 242) (1/74)

TAPE FEED FAILURES - LIFT-OFF TAPE

If experiencing lift-off tape feed failures, check the base of the take-up spool for a binding condition with the swing arm (26-30). If a bind exists, the spiked wheel (26-006) will be cammed off the tape.

If this condition exists, replace the lift-off tape.

5 SERVICE INFORMATION (CEM 324) (10/76)

CORRECTING TAPE FEED — REDESIGNED

The correcting tape feed parts have been redesigned to facilitate manufacturing. When replacing the early level feed pawl and link asm. (26-4), it will be necessary to order B/M (26-13) (Figure 1).

MECH. 26

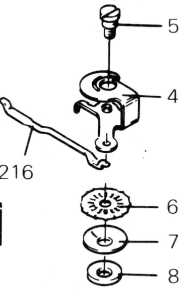


Figure 1

6 RELIABILITY (CEM 197) (3/73)

CRADLE ASSEMBLY BINDS

Spooling off of the IBM Tech III coverup tape and/or interference between the ribbon and either of the correcting tapes may cause damage to the ribbon. This can cause voids due to the ribbon folding or due to the correcting tapes removing ink from the ribbon.

1. The high bias spring may be preventing the tape supply ratchet from returning to rest. This condition is corrected by forming the high bias spring to slightly open the angle at the tip (Figure 1).
2. When the high bias spring is manually rotated too far counterclockwise, the sensing shoe may bind on the base of the supply ratchet pivot post (Figure 2). This leaves the high bias spring disengaged from the supply ratchet. To correct, replace the tape supply cradle assembly (26-34).

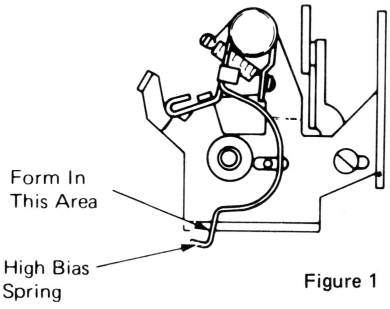


Figure 1

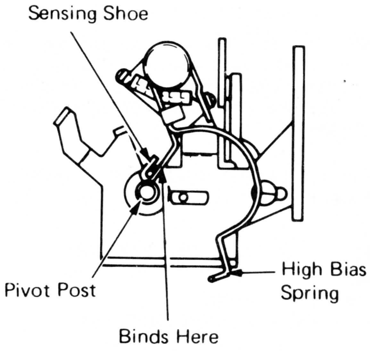


Figure 2

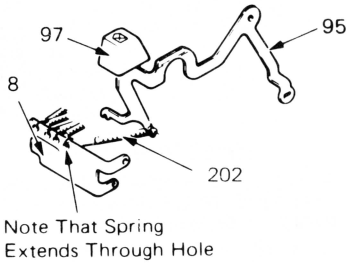
Recovery Code Expired 3-7-73

7 RELIABILITY (CEM 261) (9/74)

CORRECTING KEYLEVER AND BUTTON - REDESIGNED

Correcting keylever (26-95) and button (26-97) have been redesigned to prevent unintentional activation of the correcting mechanism.

The button has been lowered in height and a spring added to the keylever increases the force required to initiate a correcting cycle. Spring (26-202) anchors to a hole added to front keylever guard (08-8). Install spring so that it will not interfere with the keybutton when depressed.



Spring (26-202) may be shortened to increase the pressure if unintentional actuation persists.

Plant installed above approx. S/N: 8X3-1315900, 8X5-2446400.

Recovery Code Expired 7-75

1 SERVICE INFORMATION (CEM 310) (2/79)

CORRECTING MECHANISM - REDESIGNED

A new correcting mechanism has been redesigned to improve serviceability. This change includes a "floating torque bar". All adjustments and parts used with this design will be identified with the abbreviation "FTB". The old style carrier is no longer used. When replacing the old style carrier with the current level "FTB" carrier, below the specified SN range, it will be necessary to change to the FTB. Order the front carrier support asm (26-130) and the mode link (26-86). Also remove the bracket (26-89) before installing FTB parts and add the spring (26-52).

The inhibitor actuating bellcrank is preset at the plant and should not have to be adjusted in the field to meet any of the required adjustments. The ribbon feed pawl mounting bracket asm. has been redesigned to mount the torque bar guide clip. THE FEED CAM FOLLOWER BRACKET SHOULD BE ADJUSTED DOWN TO ITS LOWEST LIMITS. THE ADJUSTMENT OF THE FEED CAM FOLLOWER BRACKET TO ALIGN THE PAWL IN THE FEED WHEEL (15-73) IS NOW PERFORMED ON THE FTB LEVEL BY FORMING THE REAR OF THE RIBBON FEED PAWL TO CENTER THE FEED PAWL IN THE WINDOW OF THE FEED WHEEL.

The shift interrupter mounting bracket (26-91) used on the new FTB mechanism is now the same one used on all X3 and X5 non-correcting. However, it does use a new mounting screw (16-69) (26-92).

Plant installed above S/N: 8X3 - 1598062; 8X5 - 2967661.

2 RELIABILITY (CEM 338) (4/77)

STALLING DURING CORRECTIONS

Check for two possible conditions: Some machines may have reached the field with two washers (26-7) installed. Also, it is possible that some washers are out of specification and can apply excessive pressure. If two washers are found, remove one and if binding still occurs, replace washer and lubricate with No. 23 grease.

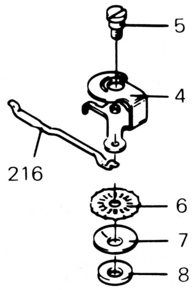


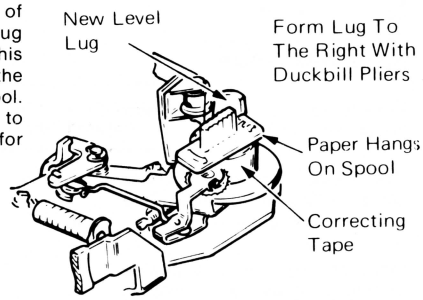
Figure 1

Recovery Code
Expired 3-78

3 SERVICE INFORMATION (CEM 344) (5/77)

TAPE TAKE UP SPOOL - PAPER INTERFERENCE

If experiencing problems with the correcting tape take up spool interfering with the top edge of cards or forms, the new level lug can be formed to the right. This keeps the paper from hitting the upper flange of the take up spool. Also, it may be necessary to readjust the lug front-to-rear for clearance to the platen.



4 RELIABILITY (CEM 386)(2/79)

CORRECTING MECHANISM FRONT CARRIER SUPPORT AND TORQUE BAR ASM. CHANGED FROM PLASTIC TO METAL

If experiencing correcting failures on machines with the molded plastic carrier support and torque bar (26-130), replace with the metal asm.

The adjustments for the metal support and torque bar can be located in the APM.

MACHINES AFFECTED: All correcting "Selectrics" with the plastic carrier support (between S/N: 3795000 - 6170000).

The plastic support and torque bar are no longer available. There is a low availability of parts; order parts on an as needed basis.

Recovery Code
Expired 1-31-80

5 SERVICE INFORMATION (1/80)

RIGHT-HAND DUST SHIELD RETAINER CLIP

Check the right-hand dust shield retainer (16-31) for interference with the correcting actuating link (26-86).

Form the bracket to ensure reliable operation of the correcting mechanism. This condition should be checked with the dust shield installed, because the shield will push the bracket toward the front of the machine.

6 RELIABILITY (CEM 413) (2/80)

CORRECTION TAPE-INTERMITTENT FEED FAILURES

Intermittent correction tape feed failures and/or incomplete lift off may be caused by a defective pawl feed mounting screw (26-5). The screw is undersize in the area where the washer (26-7) is mounted (Figure 1). This allows the washer to be off center and partially cover the teeth on the spiked take-up ratchet (Figure 2).

When experiencing this problem, replace the screw (26-5).

Approx. S/N: 8X3 - 5147714—5181900; 8X5 - 6462050—6557510.

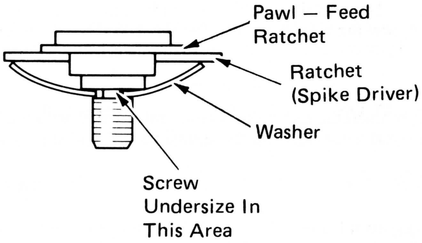


Figure 1

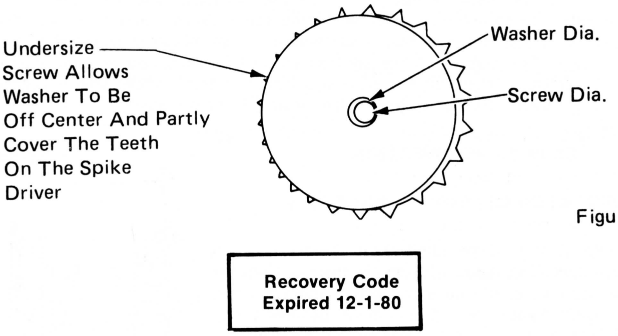

Undersize Screw Allows Washer To Be Off Center And Partly Cover The Teeth On The Spike Driver
Washer Dia.
Screw Dia.

Figure 2

Recovery Code
Expired 12-1-80

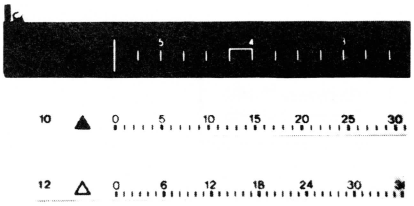
COVERS & MOUNTING

1 SERVICE INFORMATION (CEM 62) (8/70)

PAPER TABLE AND MARGIN SCALE GRAPHICS

Universal erasing tables. Easier to read. Easier centering. Paper tables are marked in inches, beginning at the center.

Margin scales have pitch identification at left end. A filled triangle indicates 10 pitch; an open triangle, 12 pitch.



2 SERVICE INFORMATION (10/68)

MARGIN TRIM INSTALLATION

Margin trim is held in place by glue. The glue is activated by **soaking** with IBM cleaning fluid. After the glue has become sticky, install the margin trim on the covers.

This can be applied to loose scales also. Simply reactivate the glue with cleaning fluid and reinstall the trim. Often there is no need for trim replacement.

3 SERVICE INFORMATION (1/74)

MARGIN TRIM - SCRATCHED

Appearance "Selectric" Typewriter: Scratched margin trim may be restored to its original "brushed" finish by polishing the aluminum trim with abrasive paper.

4 SERVICE INFORMATION (1/74)

SERVICE HISTORY INSERT

The recommended location for the service history insert on "Selectric" II & III Typewriters and "Selectric" Typewriters with snap-off covers is behind the left cover latch.

On "Selectric" Typewriters manufactured before snap-off covers, a clip (04-49) is available and can be used for mounting the insert to the bottom cover.

5 SERVICE INFORMATION (10/68)

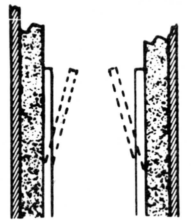
BOTTOM COVER REMOVAL - FRICTION FIT

Care should be used when removing the bottom case on "Selectric" Typewriters manufactured before snap-off covers. Insertion of the screwdriver blade between the cover sections may result in damage to the cover paint. The bottom cover section should be removed by inserting a screwdriver blade through the shipping holes at the bottom and applying outward pressure, using the power frame as a fulcrum point.

6 SERVICE INFORMATION (10/68)

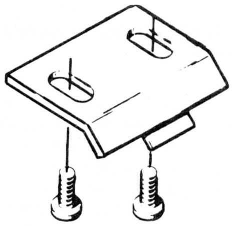
COVER LATCH LEVERS - SERVICE TIPS

The top of the center cover latch levers may be formed sightly toward the center of the machine for easier operation of the lever when servicing the "Selectric" Typewriter. Care must be exercised when forming the LH latch lever on 7X1 machines. If the angle is too great, the lever may contact the carrier assembly when carrier return is operated and the margin is set at position 0.


L. H. Latch Lever R. H. Latch Lever

7 SERVICE INFORMATION (10/68)

TOP COVER HINGE BRACKET



The I/O top cover hinge bracket (P/N 1135462) can be used on former level covers. This will ensure a more positive "cover up" position. Two screws (P/N 38235) are needed because of the bracket thickness.

8 SERVICE INFORMATION (CEM 245) (4/74) (CEM 339) (4/77)

TOP COVER HINGE - REDESIGNED

The top cover hinge has been redesigned to a friction type bracket (Figure 1). If replacing a hinge or bracket within the serial number range listed below, it will be necessary to replace both the cover hinge (04-32, 05-06, 49) and bracket (04-04, 05-04). Also use spacer (05-127) when replacing on old level "Selectric" II (Figure 2).

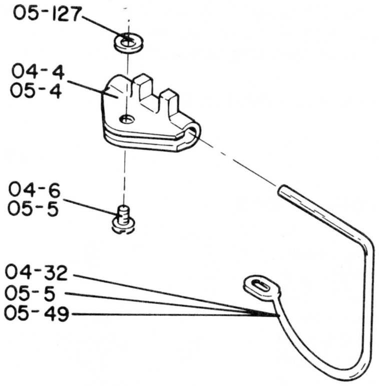
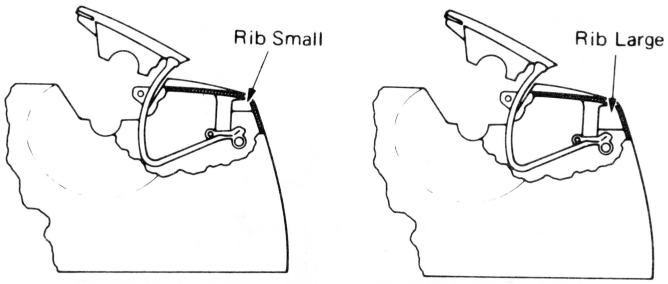


Figure 1



Old Level **New Level**

Figure 2

Above approx. S/N: 7X1 - 4161710, 7X3 - 4788645, 7X5 - 4444350, 8XX - 1276632—2380509.

9 RELIABILITY (CEM 286) (4/75)

CENTER COVER 7X1 - POLYESTER - WEAR

Provide top cover with a new latching surface.

SYMPTOM: Top cover latches can wear notches in the latching surface of the center cover.

Install one metal clip on each side of the cover where the latches strike (Figure 1). Clips can be formed for a more positive fit.

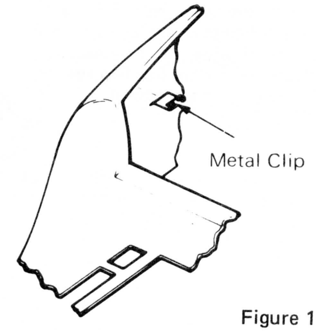


Figure 1

Recovery Code Expired 5-76

1 SERVICE INFORMATION

(CEM 326) (10/76)
(CEM 287) (9/77)

PLATEN KNOBS AND VENT GRILLS - BLACK — 7XX, 8XX

Platen knobs and vent grills for "Selectric" and "Selectric" II Typewriters will be available in black only. When ordering a replacement knob, other than black, it will be necessary to order two.

2 RELIABILITY

(CEM 348) (6/77)

TOP COVER LATCH - STRENGTHENED

The top cover latch (04-83) 7XX and latch (05-02) 8XX have been strengthened. If experiencing vibrations with top covers, replace latch (gold in color) with new latch (silver in color).

Between approx. S/N: 7XX - 6031956—6033770, 8X3 - 1584050—1756773, 8X5 - 2939243—3312409.

Recovery Code
Expired 6-78

3 SERVICE INFORMATION

(12/79)

TOP COVER PIN

If a top cover pin is needed on a "Selectric" II or III Typewriter cover, the "Selectric" I Typewriter pin (04-85) can be used. This pin is shorter but will work on "Selectric" II or III Typewriters if needed.

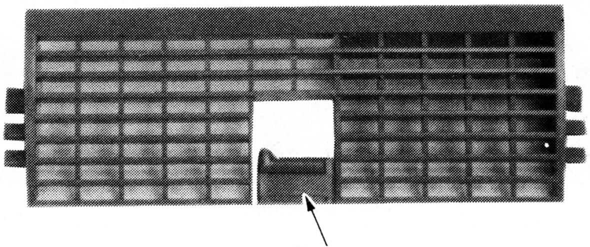
4 SAFETY

MOTOR VENT GRILL DOUBLE INSULATION - BREAKAGE

(CEM 213) (8/73)
(CEM 439) (9/80)

Double Insulation: "Selectric", "Selectric" II and "Selectric" III Typewriters with the logo "Double Insulation Grounding Not Required" on the rear of the machine or the UL control number "286A" on the patent label must have the extension on the motor vent grill to maintain double insulation standards. If the extension is broken off or is missing, replace the grill.

Moving the motor vent grill extension too far to the rear or toward the front of the machine may cause it to crack or break. The extension should be moved toward the rear of the machine only far enough to let the linecord in.



5 SERVICE INFORMATION

(CEM 311) (3/76)

COVER HINGE SCREW - STRIPPED

If the screw hole in the center cover (where the top cover hinge mounts) is stripped, a possible solution is to use the self-tapping screw (P/N 1190587) to remount the hinge.

6 SERVICE INFORMATION

(10/68)

COVER INCOMPATIBILITY - 7X1

Approximately 2000 Model 7X1 "Selectric" Typewriters between S/N's 5731748 and 5735580 were manufactured using World Trade cover sections. These covers can be identified by the following numbers: 6518613 is cast into the bottom cover on the inside (may be hidden under the foam); 6518503 for the center section; and 6512987 on the top cover.

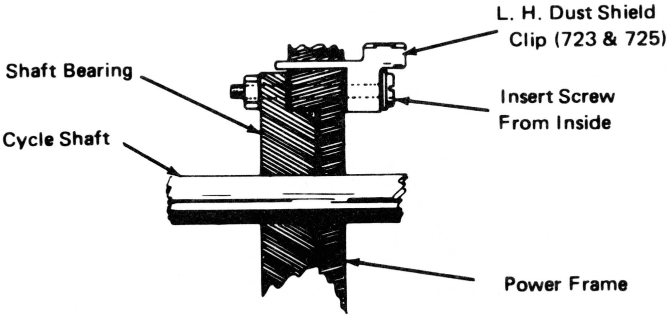
U.S. cover sections and margin trim are not compatible with these covers. Therefore, if any cover section needs to be replaced on these machines, it will be necessary to replace the complete cover set. **Service Code 12 is authorized for the life of the machine for any trouble due to this cover incompatibility.**

7 SERVICE INFORMATION

(10/68)

DUST SHIELD CLIP - SERVICE TIP

LH Dust Shield Clip: Future service time may be reduced on service calls requiring removal of the LH cycle shaft bearing by reversing the LH dust shield clip (23 and 25) mounting screw. Place the washer next to the screw head; then insert the screw through the dust shield clip and run the screw through the power frame from the inside. The bearing plate will be held by tightening the nut from the outside. When this is done, the dust shield clip and screw need not be removed during future bearing removals.



8 SAFETY

HEAT BUILDUP - MOTOR VENT GRILL

(CEM 407) (11/79)

If the motor vent grill is blocked and the machine is left on, the parts can become hot enough to cause possible injury.

If the vent is blocked, remove the blockage. Advise the customer to maintain proper clearance to ensure air flow.

9 SERVICE INFORMATION

(CEM 419) (3/80)

TOP COVER LATCH - SHOCK MOUNTS

If the top cover vibrates and cannot be satisfactorily adjusted to eliminate the problem, install the top cover latch shock mounts (05-82) (Figure 1).

Adjust the latches so that the shock mounts are completely compressed. This is done to ensure that the customer will not have difficulty in lifting the top cover.

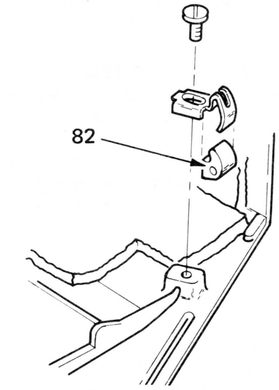
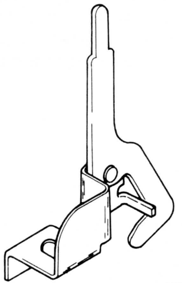


Figure 1

1 SERVICE INFORMATION (CEM 430)(7/80)

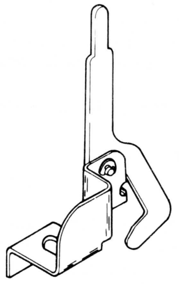
CENTER COVER LATCH BRACKET - REDESIGNED

The center cover latch bracket (05-43, 05-18) has been redesigned so that the latch lever (05-44, 05-16) can be installed to the inside of the bracket (Figure 1). This change gives more clearance between the lever and the foam, and makes it easier to unlatch the covers.



New Level

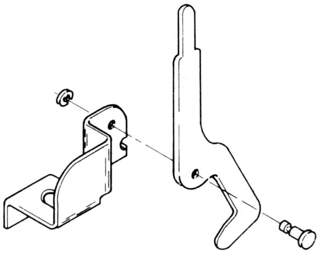
Figure 1



Old Level

Figure 2

Until the new bracket is available, manufacturing is using the old level parts (Figure 2) and reversing the lever (Figure 3). This method can also be used in the field if desired.



Modified Old Level

Figure 3

2 SERVICE INFORMATION (12/80)

PAPER TABLE FOAM

Replacement of the foam strip (04-60, 159) on the underside of the paper table (05-56, 30-139) will correct a squeaking noise caused by the metal surface of the paper table contacting the platen. Position the foam approximately .010"-.045" (0,25-1,14 mm) from the front edge of the paper table. The foam strip (05-60, 159) may be used for "Selectric" III sound reduction paper tables (30-139).

3 SERVICE INFORMATION (CEM 325) (9/76)

ON/OFF BUTTON JAMMED – SOUND PACK MEMBRANE SUPPORT

The membrane support (30-25) should be removed from the keyboard before tilting maching to the upright position. The frame falls under the on/off button, jamming it in the on position.

DEAD KEY

4 SERVICE INFORMATION (4/77)

DEAD KEY, DEAD KEY DISCONNECT - EXPLANATION

The Dead Key Feature removes the escapement trigger from the escapement torque bar lug when typing non-escaping characters. This feature is mainly used in World Trade and nonstandard U.S. keyboards. **This cannot be installed in the field.**

Dead Key Disconnect Feature disables the dead key feature to provide escapement in all typing positions. **This feature can be installed in the field, but only on machines that already have the dead key installed.**

5 SERVICE INFORMATION (CEM 296)(7/75)

DEAD KEY CABLE BREAKING - CORRECTING SELECTRIC

To prevent dead key cables from breaking, a redesigned correcting mode latch bellcrank is now available.

Symptom: Dead key cable breaking in the escapement trigger area.

Install the redesigned mode latch bellcrank (26-80).

6 SERVICE INFORMATION (10/68)

DEAD KEY CABLE - OPERATIONAL SHAFT WEAR

If the dead key cable assembly contacts the operational shaft, a groove may be worn in the operational shaft deep enough to cause breakage. To remove this possibility, install the dead key cable assembly behind the right-hand dust shield cap. Take up slack until cable just touches clip. Check dead key operation to ensure it is working properly.

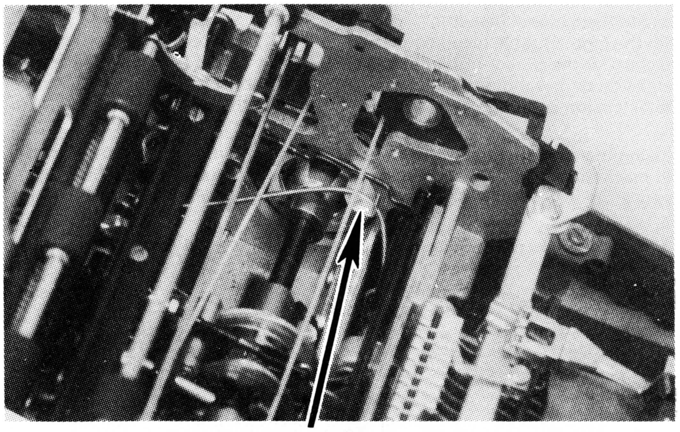


Figure 1

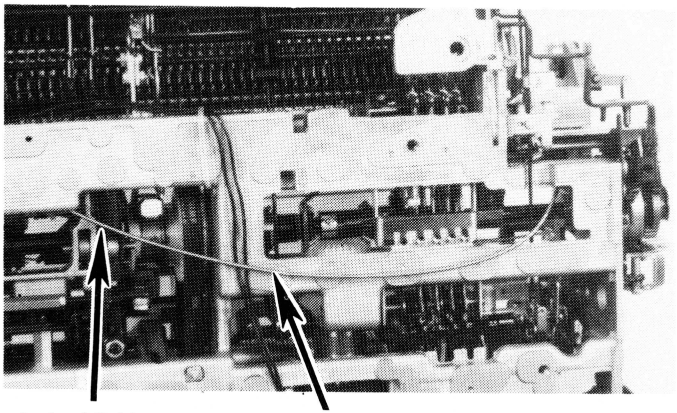


Figure 2

ESCAPEMENT

1 RELIABILITY

(CEM 159) (5/72)
(CEM 260) (6/74)
(CEM 276) (12/74)

ESCAPEMENT - SKIPPING
ESCAPEMENT PAWL AND RACK

If skipping or extra spaces occur, check the escapement pawl tip for wear. If the tip is worn (Figure 1), replace the pawl. Also, check the escapement rack for wear or peeled plating. Replace the rack if either condition exists.

The following list should aid in diagnosing escapement pawl wear:

1. One of the first signs of wear is tab failures (extra space or spaces) on short tabs of approximately one inch (25,4mm).
2. Excessively load the carrier to the right by hand and operate the repeat spacebar. If there is enough wear, the carrier will skip spaces.
3. With the carrier resting on the escapement pawl, move the carrier slightly to the left by hand, and observe the motion of the escapement pawl on the spring lug. If wear is present, the pawl will move slightly toward the front of the machine as it fully bottoms in the ecapement rack. A worn pawl will not be fully bottomed when holding the carrier under mainspring tension.
4. A final check for wear is to feel the working surface of the pawl with a springhook. If the pawl is excessively worn, a slight notch can be felt. It is possible that enough wear may be present to cause failures but no notch can be felt. This procedure is only useful when excessive wear is present.

Although the above-listed aids will simplify diagnosing worn pawls, do not overlook the possibility of other maladjustments as the cause of the problem, i.e., tab rack adjustment, pawl clearance, etc.

Check replacement pawls and escapement bracket assemblies to ensure the working surface of the tip is smooth. Scrap pawls that have rough or uneven tips (Figure 2).

Recovery Code Expired 12-1-75

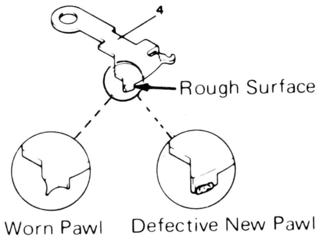


Figure 1 Figure 2

2 SERVICE INFORMATION

(10/68)

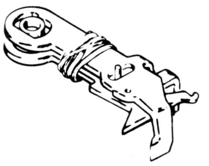
PAWL REPLACEMENT PROCEDURE

Backspace-Escapement Pawl Replacement Procedure: Here is a quick well-controlled way of removing and replacing the backspace and escapement pawl.

1. Center the carrier between two feed roll arms to access pawl mounting stud nut. Remove the nut.
2. Push pawl mounting stud down to just clear the escapement bracket.
3. Remove the tab lever spring, and tab trigger spring.
4. Lift out the tab trigger, tab lever and spacer.
5. Remove escapement pawl spring and backspace pawl spring.
6. Move the carrier to the right.
7. The backspace pawl, escapement pawl and spacer will remain on the mounting stud. The mounting stud collar will rest on the escapement torque bar. Just pick them up.

To replace, reverse this procedure.

NOTE: Installation of the escapement and backspace pawls and spacer will be much easier if the two pawls and spacer are assembled and held with a rubber band. Then the three parts can be installed as a single unit and the rubber band cut away.



3 SERVICE INFORMATION

(10/68)

ESCAPEMENT PAWL SPRING REPLACEMENT

When replacing the escapement pawl spring (06-25, 07-06), it may take less time if the tab lever and tab trigger are removed. This will allow access to hook up the spring.

4 SERVICE INFORMATION

(10/68)

ESCAPEMENT SHAFT BEARINGS BIND

If escapement failures are caused by a bind in the escapement shaft, the bearings may be hit lightly in or out of the back plate or power frame to better align them with the shaft.

5 SERVICE INFORMATION

(9/77)

ESCAPEMENT TRIGGER HEIGHT - VARIES

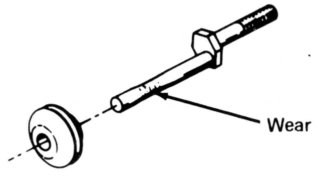
On some machines, the escapement trigger height will differ on the two lobes of the escapement cam, resulting in piling or skipping. This is caused by a bent filter shaft or an eccentric escapement cam. In some cases, rotating the escapement cam 180 degrees will adjust this eccentric condition and allow proper adjustment of the trigger height. If this is unsuccessful, replace the filter shaft and escapement cam.

6 SERVICE INFORMATION

(1/74)

ESCAPEMENT FAILURES - OLDER MACHINES

Some escapement failures have been caused by wear on the transport cord idler pulley stud. When worn, the pulley fails to track properly and causes a slight bind. See drawing.



7 SERVICE INFORMATION

(1/71)

SPACE-TO-PRINT ESCAPEMENT SERVICE HINTS

An uneven typing speed can cause displacement of characters and/or type piling.

DISPLACEMENT:

(Space)

NOW IS (Correct)

NOWIS (Displacement: I was printed in part of the space).

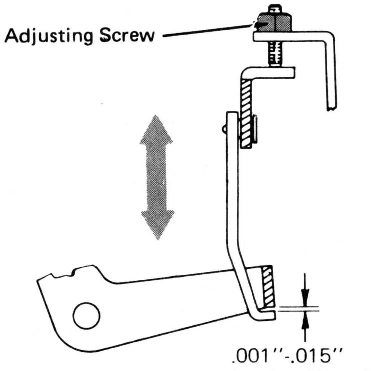
TYPE PILING:

NOW IS (Correct)

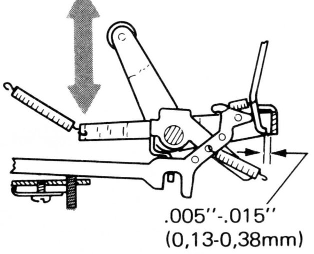
NOWS (Piling)

These conditions can be reduced by the following adjustments:

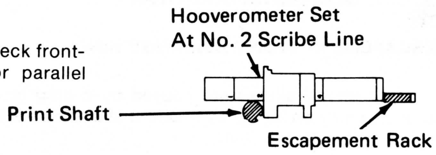
1. Operational Latch Height - Adjust to the low side of the adjustment range (.005")(0,13mm). Be sure to check this adjustment on both lobes of the spacebar cam.



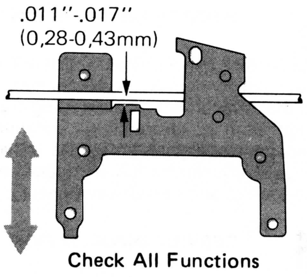
2. Interposer Adjusting Screw - Adjust the interposer adjusting screw so that a front-to-rear clearance of .005"-.015"(0,13-0,38mm) exists between the operational latch and the cam follower. Adjust to low side of the adjustment. Check keylever pawl-to-interposer clearance after making this adjustment (.005"-.015") (0,13-0,38 mm).



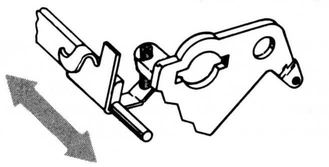
3. Escapement Rack - Check front-to-rear adjustment for parallel with print shaft.



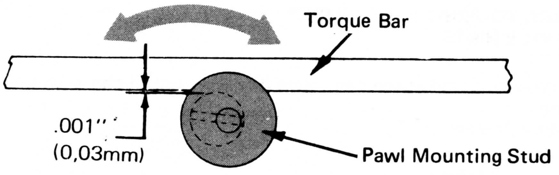
4. Escapement Bracket - Adjust front-to-rear for .011"-.017" (0,28-0,43 mm) clearance between escapement bracket and tab torque bar. Check on both ends and center for possible bent torque bar.



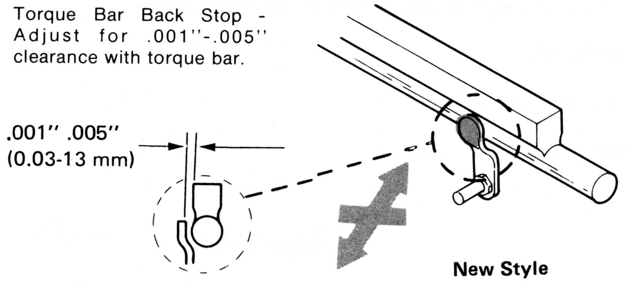
5. Escapement Torque Bar Stop - Adjust for .005"-.008" (0,13-0,20 mm) between the escapement pawl lug and torque bar.



6. Escapement Torque Bar Parallel - Observe at both ends and center of torque bar the clearance between the pawl mounting stud and the torque bar.

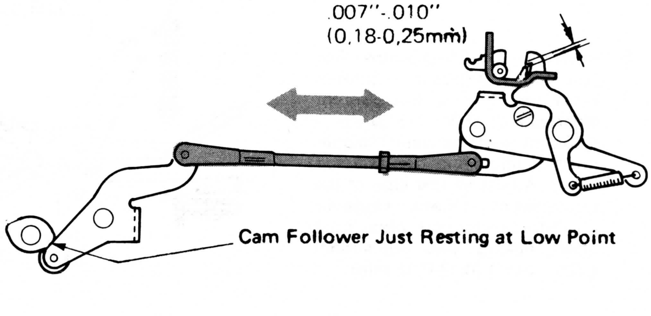


7. Torque Bar Back Stop - Adjust for .001"-.005" clearance with torque bar.

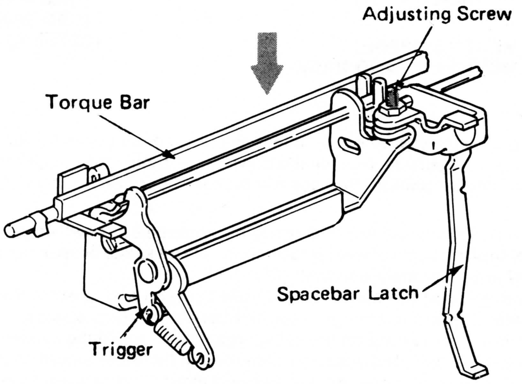


8. Print Escapement Cam - Adjust the print escapement cam so the cam follower JUST reaches the low point of the escapement cam at rest. To check the adjustment, hand cycle a character. Escapement should occur AFTER print and BEFORE the rocker returns to the rest position.

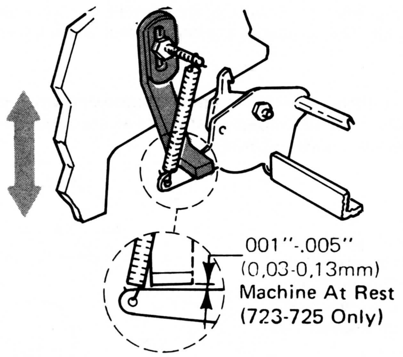
9. Escapement Trip Link - Back out the latch lever adjusting screw (Paragraph 10) and move the trigger upstop out of the way. Loosen the nut on the escapement trip link and turn the LINK to adjust for .007" to .010" trigger-to-torque bar clearance. Keep this on the low side of the adjustment range; tighten nut. **Note:** Be sure the rest position of the torque bar is correct.



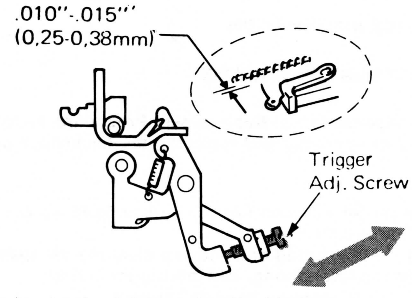
10. Spacebar Latch Lever Screw - Adjust this screw down until it meets the operational bracket and tighten the lock nut.



11. Trigger Lever Upstop - With the machine at rest, adjust for .001"-.005" clearance between the trigger lever upstop and the trigger lever.



12. Escapement Trigger Action - Adjust the trigger adjusting screw so the escapement trigger will disengage from the torque bar lug when the escapement pawl clears the rack by .010"-.015".



Caution: Remember to check for cord pulley binds, escapement shaft binds and possible binds in the print shaft keyway.

Note: If the above adjustments do not give satisfactory results, then the space-to-print interlock B/M (17-370) can be installed. Instructions are included in the B/M.

Other possible causes of piling not related to space-to-print escapement timing:

1. Binding cord pulleys.
2. No shoe to escapement rack clearance.
3. Rough escapement rack.
4. Worn or maladjusted pinion to escapement shaft drum.
5. Print sleeve key broken.
6. Dirt in keyway.
7. Weak or broken main spring.
8. Bind in escapement shaft.
9. Cardholder rubbing front feed rollers and/or not enough platen clearance.
10. Warped torque bar.
11. Warped dust shield rubbing bottom of rocker area.
12. Insufficient carrier return shoe clearance.
13. Tab set and clear bracket rubbing tab rack - check tab rack position.
14. Carrier support too high - 723-725.
15. Print shaft wipers dirty.

1 SERVICE INFORMATION

(CEM 332) (1/77)

ESCAPEMENT RAIL - RB/S

The escapement rail material has been changed to molded polyester. If replacement is necessary on machines below S/Ns listed, replace screw (07-12) (Figure 1). Order four screws for the 8X3 and six screws for the 8X5.

Plant installed above approx. S/N: 8X3 - 1790000 and 8X5 - 3279000.

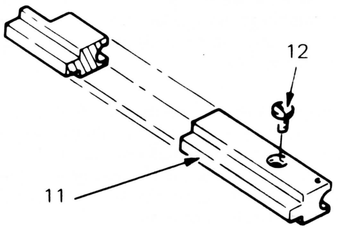


Figure 1

2 SERVICE INFORMATION

(CEM 335) (12/77)

SINGLE PITCH WITH ROTARY BACKSPACE

Single pitch "Selectric" II Typewriters above the S/N range below are manufactured with rotary backspace. A universal (9,10 and 12 pitch) backplate asm. will be used on all single-pitch machines. All adjustments to the margin, tab, and rotary backspace will be designated RB/S (Rotary Backspace) and NRB/S (Non-Rotary Backspace) where appropriate.

Above approx. S/N: 8X3 - 1761000 and 8X5 - 3324000.

3 SERVICE INFORMATION

(CEM 346) (5/77)

TORQUE BACKUP SCREW NUT - DISCONTINUED

The left hand escapement torque bar screw nut (07-61) has been discontinued on all (RB/S) "Selectric" II Typewriters. The escapement rack torsion spring (07-48) will provide the necessary tension to hold the screw in place.

4 RELIABILITY

(CEM 383) (2/79)

ESCAPEMENT RACKS - SOFT

Failures caused by premature wear of 721 escapement rack (6-27) may appear in:

1. Backspace
2. Escapement (skipping)
3. Overbank (uneven margin)
4. Tab (uneven columns and/or button hard to depress)

Replace rack.

S/N: 12 pitch - 0808000—0817000, 10 pitch - 0784000—0817000.

Recovery Code
Expired 3-1-80

5 SERVICE INFORMATION

(CEM 460) (7/81)

ESCAPEMENT PAWL MOUNTING STUD AND SPACER (RB/S) - REDESIGNED

The Level 2 escapement pawl mounting stud (07-5) and spacer (07-3) have been redesigned to eliminate the need for the former level spacer and shim.

When replacement of either the stud or the spacer is required on machines below the specified S/N range(s), replace both parts with the new level parts and discard the shim.

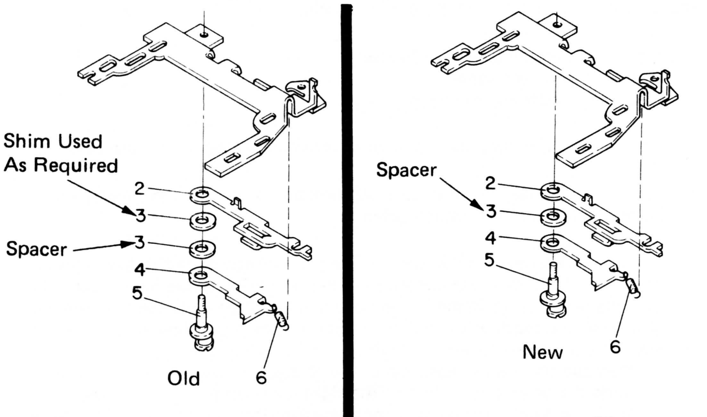


Figure 1

Plant installed above approx. S/N: 8X3 - 5289139, 8X5 - 6868874, 6701 - 0001239, 6702 - 1003697, 6703 - 2005463, 6704 - 30003246, 6705 - 4110573.

6 SERVICE INFORMATION

(CEM 83) (12/70)

ESCAPEMENT – SKIPPING – NEW TRIGGER MECHANISM

The trigger upstop adjustment **must** be made prpperly on 7X3 and 7X5 machines equipped with the new trigger mechanism. By adjusting the upstop for .001"-.005" (0,03-0,13mm) clearance with the trigger arm, it will reduce the vibration or bounce of the escapement trigger when it restores to the rest position.

Since 7X1 machines do not have an upstop, a spring (06-17) has been added. The spring prevents excessive overthrow of the trigger assembly, reducing bounce when restoring.

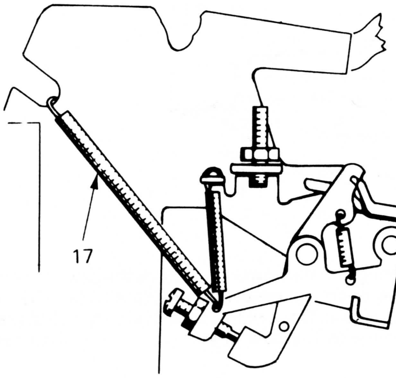


Figure 1

Recovery Code
Expired 12-31-71

FRAMES

1 SERVICE INFORMATION (CEM 92) (1/71)

CENTER BEARING - REPLACEMENT

A tool is available for replacement of "Selectric" Typewriter center bearings (08-30).

If normal maintenance techniques fail to clear up the problems listed below, the problem may be caused by a worn center bearing.

1. Typehead detenting keeps changing.
2. Decrease in motor speed.
3. Negative 5 latch adj. keeps changing.

The following procedure should be used when checking for a worn bearing.

Remove headplay in the clockwise direction and note the position of a typehead tooth to the rotate detent.

Push down and toward the front on the cycle clutch pulley. If there is more than .040" (1,02 mm) movement from the point noted, the bearing should be replaced (.040"[1,02 mm] is approximately 1/2 the distance from the top of a typehead tooth to the bottom of the notch). The following procedure may be used to replace the bearing:

1. Remove the cycle shaft, cycle clutch pulley, cycle clutch latch and slide the operational shaft to the right far enough to allow removal of the torque limiter and the carrier return and tab pinion gears. The cycle shaft and cycle clutch pulley should be replaced with new parts.
2. Install the bearing tool as shown in Figure 1. Gauge the position of the worn bearing by placing the Hooverometer foot against the power frame and slide the Hooverometer head against the bearing pusher. This setting will be used to reposition the new bearing.

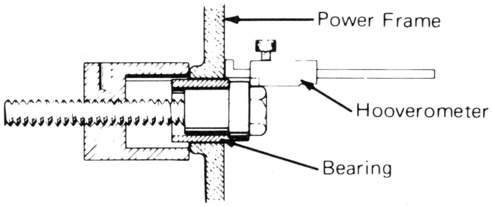


Figure 1

3. By tightening the bolt, push the worn bearing out of the power frame. If the cup turns, a tool can be inserted in the hole near the end of the cup to hold it still.
4. Using a new bearing, install the tool as shown in Figure 2 with the tool "finger" tight.

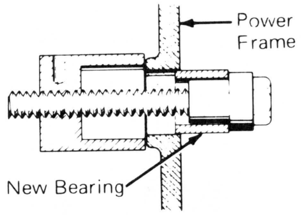


Figure 2

5. Press the new bearing into the power frame until the Hooverometer just spans the distance originally measured in step 2 (Figure 1).
6. Reassemble the machine. Be sure to check cycle shaft end play, as it may have changed with the new bearing and cycle shaft assembly installed.

Center bearing tool, (T21-11), requires 9/16 wrench, (T05-3), or similar.

INDEX

2 SERVICE INFORMATION (CEM 262) (7/74) (CEM 311) (9/76)

INDEX FAILURES

The reliability of the carrier return or index mechanisms may be affected by excessive feed roll pressure, binds in the paper feed mechanism or platen latches, binding platen bushings, excessive carrier return torque limiter or spring clutch pressure, or any other malfunction that would cause an increased load on the mechanisms.

On XX5 machines, flexing of the operational shaft, because of a loose or maladjusted operational shaft support, allows lost motion in the index/carrier return cam system, resulting in occasional failures under heavy loads, i.e., heavy envelopes, thick carbon copies, etc. In addition, if the interposer bail adjustment is marginal, flexing of the operational shaft may result in unwanted repeat indexing and/or carrier return operations.

It is recommended that the plastic operational shaft support be replaced with the new level support (25-307).

3 SERVICE INFORMATION (CEM 414) (2/80)

INDEX PAWL AND RATCHET ALIGNMENT

Some indexing failures can be caused by bad alignment of the index pawl and platen ratchet. A combination of nylon shims placed between the ratchet retainer and bushing will provide proper alignment (Figure 1). These shims are in parts packet No. 8.

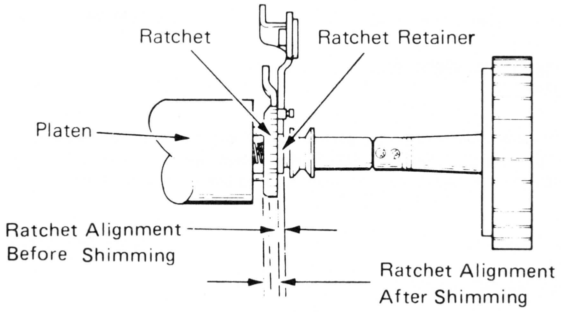

Ratchet
Ratchet Retainer
Platen
Ratchet Alignment Before Shimming
Ratchet Alignment After Shimming

Figure 1

To provide alignment between the index ratchet and index pawl, a metal washer (02-44), P/N 1175868, is being installed between the retainer clip and the bushing on an "as needed basis." Both methods are acceptable.

4 RELIABILITY (CEM 307) (12/75)

INDEX TRANSFER BELLCRANK STOP LUG - WEAR (LEVEL 1)

The index transfer bellcrank stop lug can wear, causing index failures. To provide a new working surface on the stop lug, install metal clip (24-120) on the stop lug as shown (Figure 1). Clips can be formed for a more positive fit.

Note: Check that the index transfer bellcrank does not have excessive side play. Add additional clips (03-632) to hold this adjustment, if necessary.

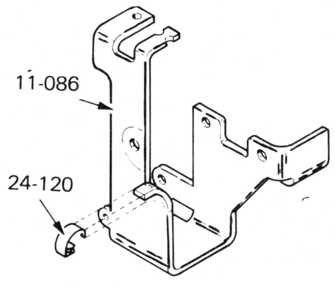


Figure 1

Recovery Code Expired 10-30-76

1 SERVICE INFORMATION (CEM 215) (1/75)

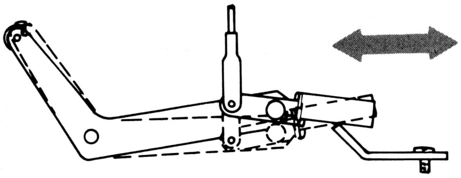
INDEXING - 2-21/2 - 3 LINES PER INCH - SER FEATURE

Some "Printing and Publishing" customers are using a modified 54-tooth index mechanism in an OCR application. This mechanism indexes the platen ratchet 4, 5 or 6 teeth, giving 2, 2 1/2 or 3 lines per inch.

This SER is no longer available. It has been replaced by double index. Replacement parts remain available in the APM.

This feature cannot be installed on: 7X1 below S/N 4012015, XX5 or dual pitch machines.

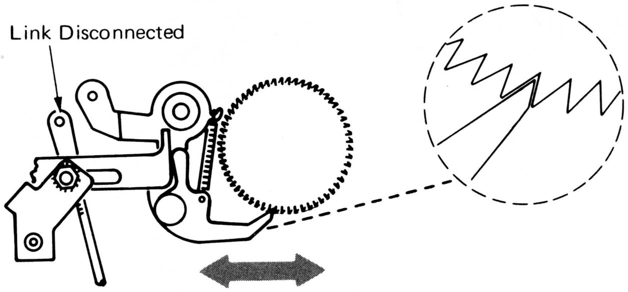
Adj. No. 1

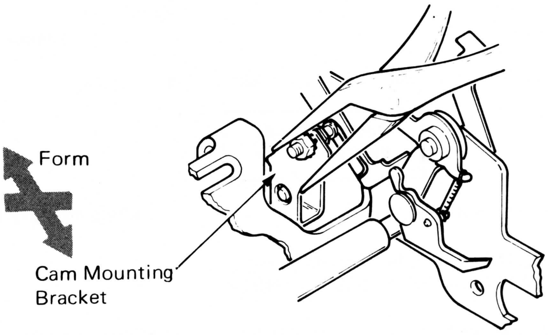


Adj. For 1/2" (12,7mm) Motion Of The Index Link

Adj. No. 2

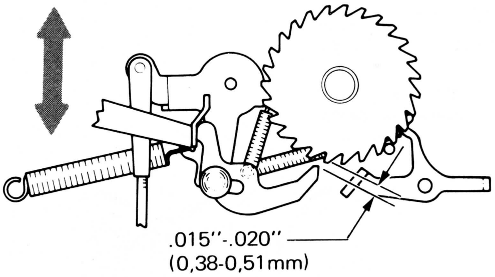
With linespace lever to the rear (6 tooth feed position), adjust for proper pawl entry.





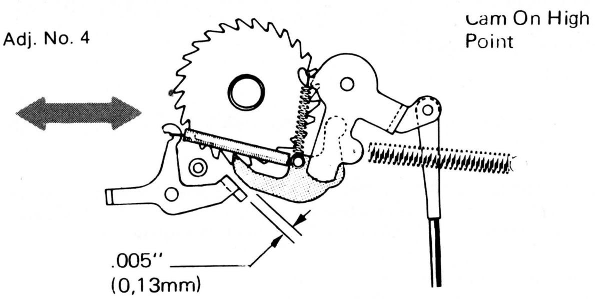
Make adjustment with link disconnected and manually rotate pawl assembly into ratchet. If more adjustment is needed, form the index selector cam mounting bracket (20-327). Do not form the selector cam. The index pawl must contact the index selector cam when at rest.

Adj. No. 3



Adjust the index link for .015"-.020" (0,38-0,51 mm) pawl tip to ratchet clearance at rest in the 6 tooth feed position.

Adj. No. 4



With cam on high point, adjust the platen overthrow stop for .005" (0,13 mm) clearance between the stop and index pawl.

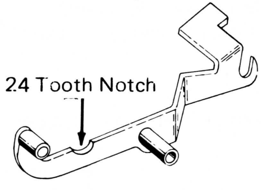
The operation of the index mechanism may be affected by excessive feed roll pressure, binds in the paper feed mechanism or platen latches, excessive C/R torque limiter or spring clutch pressure or any other malfunctions that would cause an increased load on the index mechanism.

The reliability of the repeat operation may be improved by changing the index pawl spring (20-434) to spring, P/N 1147436, and removing spring (20-436).

2 SERVICE INFORMATION (1/71)

PLATEN DETENT IDENTIFICATION

The 24-tooth detent assembly has a notch to identify it from the 27-tooth detent assembly.



3 SERVICE INFORMATION (CEM 314) (4/76)

DOUBLE INDEX MECHANISM

Provides 2, 3, 4 and 6 lines per inch with standard 54-tooth indexing, or 2, 4, and 8 lines per inch with standard 36-tooth indexing for printing and publishing customers with OCR applications. This mechanism provides a second index operation for each carrier return operation, or can be locked out for normal linespacing.

Installation of this double index B/M is billable at current labor rate.

(Continued On Next Page)

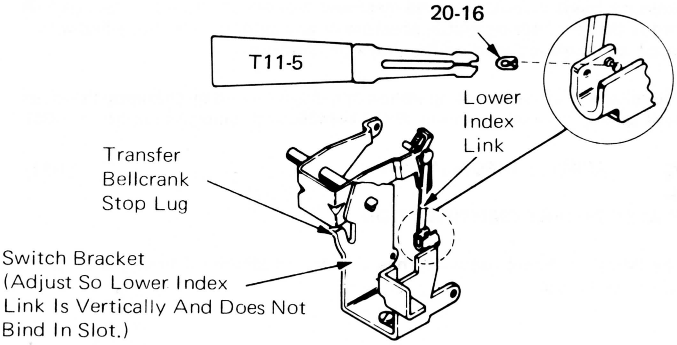
1 RELIABILITY (CEM 333) (1/77)

LOWER INDEX LINK C-CLIP - REDESIGNED

The lower index link (20-16) C-clip has been redesigned to eliminate clip breakage.

Caution should be taken when installing the clip. It is possible to damage the clip by applying too much pressure. Use the C-clip insertion tool (T11-5) and push clip over stud to the first opening. Also check the following areas:

1. Check that index transfer bellcrank stop lug is not worn.
2. Check that index transfer bellcrank (20-14) does not have excessive end play. Add additional bail clips (03-632) to hold this adjustment if necessary.
3. Ensure that the lower index link is vertical. If not, it can create pressure on the C-clip. Adjust the switch bracket left or right for this adjustment.


20-16
T11-5
Lower Index Link
Transfer Bellcrank Stop Lug
Switch Bracket (Adjust So Lower Index Link Is Vertically And Does Not Bind In Slot.)

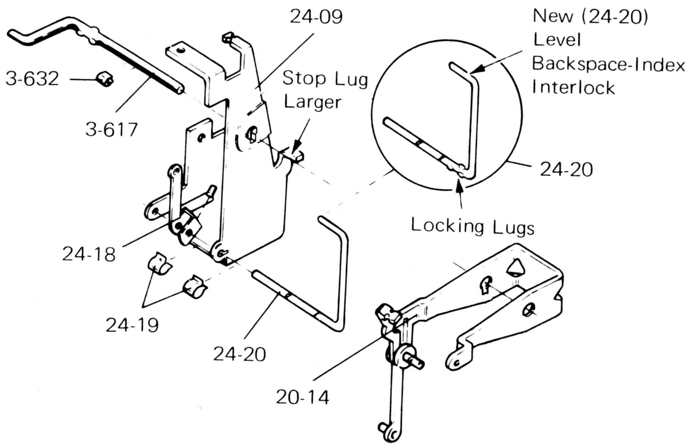
Between approx. S/N: 8X5 - 2973000 — 3290000, 8X3 - 1600000 — 1740000.

Recovery Code Expired 1-78

2 SERVICE INFORMATION (CEM 341) (5/77)

INDEX TRANSFER BELLCRANK, SWITCH BRACKET AND BACKSPACE INDEX INTERLOCK - REDESIGNED

The backspace interlock clips (24-19) and the index transfer bellcrank shaft clip (03-632) have been removed. The new parts have locking lugs that hold the parts together. When replacing either switch bracket (20-14), backspace interlock (24-20), or the index bellcrank shaft (3-617), it will be necessary to change all three parts below the S/N ranges listed.



Below approx. S/N: 8X3 - 1640000; 8X5 - 3054000.

3 RELIABILITY (CEM 365) (5/78)

DOUBLE INDEX - PLANT INSTALLED

Incorrect parts may have been installed in double index mechanism.

With incorrect parts installed, the index mechanism may cycle only once or might give extra cycles.

Check the index bellcrank (20-14) and the index latch (03-405). The double index parts shown below should be installed to correct unreliable cycling of the operational cam.

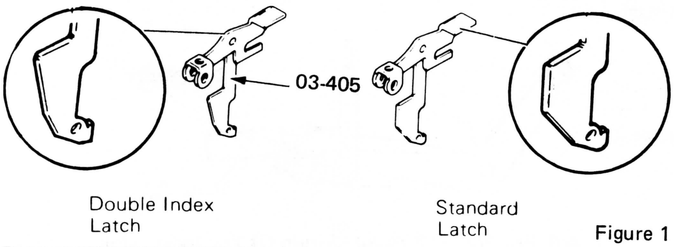


Figure 1

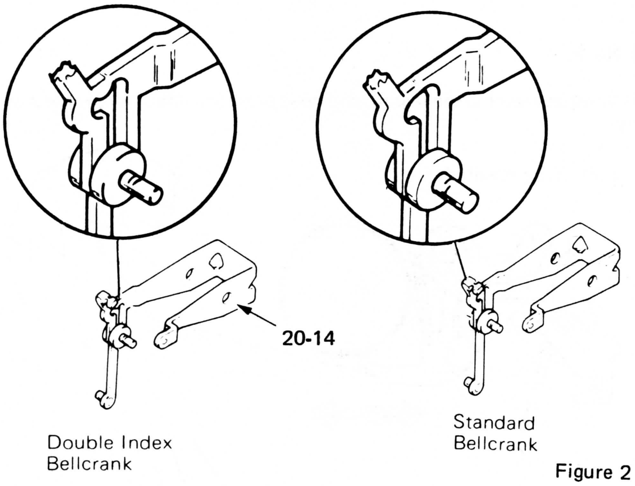


Figure 2

Below approx. S/N: 7X1 - 0695967; 8X3 - 1762633; 8X5 - 3326186.

Recovery Code Expired 5-31-79

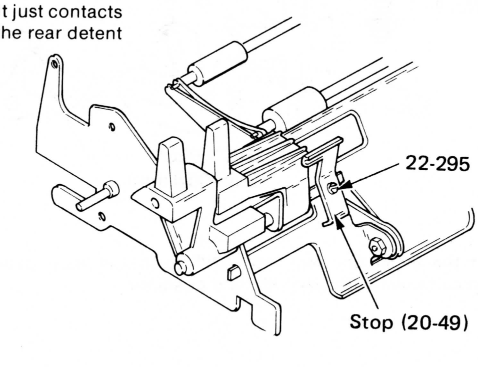
4 SERVICE INFORMATION (CEM 448) (12/80)

STOP - SELECTOR CAM LEVER MOUNTING BRACKET - "A"-FRAME WITH DOUBLE INDEX

A positive stop has been released to prevent accidental bending of the selector cam lever mounting bracket (20-327) on machines with the double index mechanism. A bent mounting bracket can result in line space failures. On double index machines, the line space lever is in the center of the cover slot in its extreme rear position. With the stop installed the lever cannot be forced to the rear of the slot. Install the stop as illustrated in Figure 1.0

This part is for field use only.
Install as required.

Form stop so that it just contacts the index lever in the rear detent position.



KEYBOARD

1 SERVICE INFORMATION (1/74)

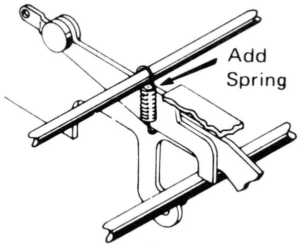
KEYBOARD TOUCH PROBLEMS

Some touch problems on the "Selectric" Typewriter can be caused by the selector latch bails resting on the lugs of the selector latch interposers. The lugs should clear the bail by .001"-.005" (0,03-0,13 mm).

2 SERVICE INFORMATION (10/68)

FLICKING

A spring, P/N 1090343, may be added between the cycle clutch trip bail and the pawl of the cycle clutch link to reduce bail bouncing.



3 SERVICE INFORMATION (10/68)

KEYLEVER SIDE PLAY

Excessive side movement of keybuttons while typing may be stopped by installing a .003" (0,08 mm) shim, P/N 1141176, between the affected keylever and its bearing support slot.

4 SERVICE INFORMATION (1/71)

BIND IN MANUAL VELOCITY CONTROL MECHANISM

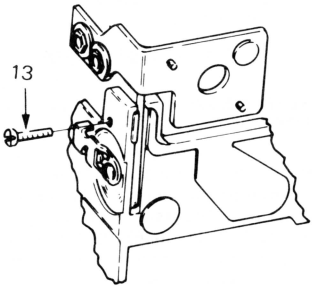
On some machines with the manual velocity control mechanism, a bind may exist between the lower velocity cam follower spring and the velocity selection lever. To prevent the bind, washer (P/N 45639) can be installed between the spring and the C-clip on the latch mounting stud.

5 RELIABILITY (CEM 47) (1/70)

LOOSE KEYBOARDS

A better keyboard mounting screw (08-13) can be installed to correct loose keyboards.

The screw can be used on any 7X3 or 7X5 machine. On early machines the outboard hole is the same size as the inboard hole and the screw head cannot and should not be tightened up to the power frame or breakage of the screw or frame will result. (Be careful to align keyboard and power frame holes.) Later machines have a larger outboard hole. Use of hex-head screw, P/N 1138975, (N/L 185) must be discontinued.

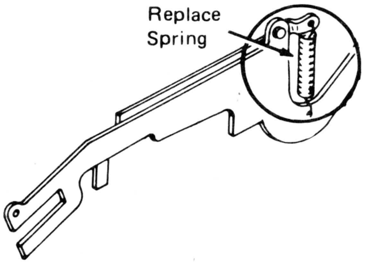


Recovery Code Expired 12-31-70

6 SERVICE INFORMATION (CEM 69) (10/70)

CYCLE CLUTCH LATCH RESTORING SPRING

Some machines may have been shipped to the field with a heavy spring on the cycle clutch latch. If experiencing a "heavy" or "tight" keyboard, replace this spring with spring (21-207).



7 SERVICE INFORMATION (10/68)

CYCLE CLUTCH LATCH LINK BINDS

Keyboard lock-up may be caused by a bind in the cycle clutch latch link (21-206). Form the cycle clutch latch bracket (21-532) so the link runs straight back.

8 SERVICE INFORMATION (10/68)

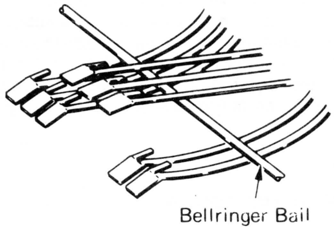
KEYLEVER RESTORING SPRINGS - REINSTALLATION

The keylever restoring springs (21-135, 136) may be restored to their operating position with the covers on. Insert a spring hook through the opening around the spacebar keybutton and reposition the displaced spring.

9 SERVICE INFORMATION (10/68)

INTERPOSER RESTORING SPRING - REPLACEMENT

When replacing an interposer restoring spring, it will help if the keylever pawl leaf springs are put over the top of the bellringer bail while installing the interposer spring. Move the bellringer bail forward and position the leaf spring over it. Reverse the procedure to position the leaf spring on the keylever pawl. Be sure the leaf spring is in the notch of the keylever.



10 SERVICE INFORMATION (10/68)

KEYLEVER RESTORING SPRINGS

Keylever restoring springs (21-135, 136) should be lubricated with No. 23 grease in automatic typing applications.

11 SERVICE INFORMATION (10/68)

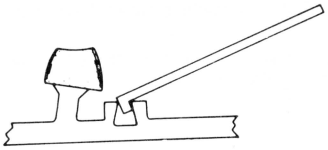
KEYLEVER PAWL BREAKAGE ON ROBOTYPER OR AUTO-TYPIST

Because of the dual stroke control, keylever pawl breakage is a continuing possibility for "Selectric" Typewriters on the Robotyper or Auto-Typist. Machine operators should be instructed not to operate the robot unit unless the typewriter is running.

12 SERVICE INFORMATION (1/71)

HOOVEROMETER AS KEYLEVER FORMING TOOL

The "L"-shaped part of the Hooverometer (T13-2) can be used as a keylever forming tool to expand the keylever lugs. This procedure is easy and safe to use. Lift up to expand lugs. Use duck bill pliers to close the lugs.



13 SERVICE INFORMATION (CEM 311) (9/76)

BROKEN KEYLEVER RESTORING SPRING - REPLACEMENT

A broken keylever restoring spring problem (21-135, 136), may be fixed by removing the unused leaf spring from 21-135, and sliding it between the broken leaf spring and the comb (21-137 or 138). The screws (21-140) should then be tightened.

1 SERVICE INFORMATION (10/68)

COMPENSATOR TUBE ADJUSTMENTS - OLD LEVEL

A quick way of adjusting the compensator tube end plugs is as follows:

1. Loosen the locking setscrews enough to turn adjusting plug (friction-tight).
2. Latch the left end interposer down.
3. Tighten LH adjusting plug so the balls hold the interposer in the latched position when the interposer latch is disengaged.
4. While holding the interposer latch spring out of position, back out adjusting plug until interposer restores freely. Then back out adjusting plug 1/6 turn more. (One flat of the hexagon nut is 1/6.)
5. Repeat the same procedure on the other side.
6. Tighten locking setscrews.

2 SERVICE INFORMATION (10/68)

INTERPOSER SLIDING OFF THE FILTER SHAFT

During a hand-cycled operation it is possible that interposers of character selections using four or more selection latches will slide off the filter shaft before the interposers have made the correct selection. This happens because of the minimum loading of the interposer on the filter shaft through the interposer latch link. Providing the interposer-to-filter shaft adjustments are correct, no failure will occur during a power operation.

3 RELIABILITY (CEM 277) (5/75)

KEYBOARD TOUCH

Some machines may have reached the field with oversized compensator tubes.

SYMPTOM: A hesitation when a keylever is depressed. This can be detected by alternately depressing position zero and forty-three keylevers. A noticeable hesitation of either keylever indicates a probable oversized compensator tube.

Tilt machine on its back, loosen the right-end plug and latch out position forty-three interposer. Pushing the end plug snugly against the balls, depress the H keylever until position forty-three interposer flexes slightly to the right and tighten the end plug. Repeat this procedure for the left side of the keyboard using position zero interposer and H keylever. If the hesitation is still detected after these adjustments, replace the keyboard (21-100).

Recovery Code
Expired 4-76

4 SERVICE INFORMATION (TIP) (10/79)

KEYLEVER PAWL RESTORING SPRINGS - INSTALLATION

A method for installing the keylever pawl restoring springs (21-142) is:

1. Cut a plastic composition binder strip (Figure 1) approximately 6"-8" (152.4-203.2 mm) long.

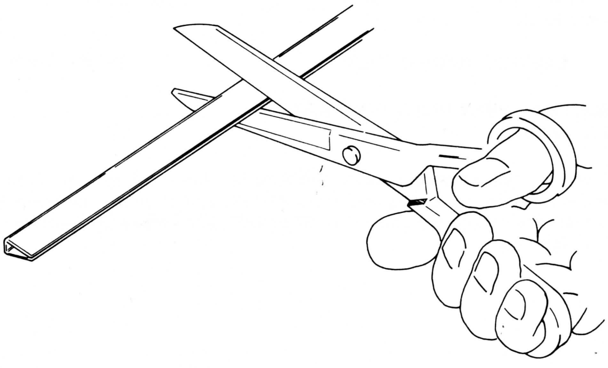


Figure 1

2. Slide binder over entire length of springs (Figure 2).

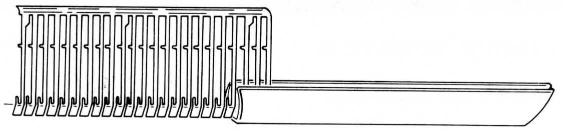


Figure 2

3. Place thumbs on the plastic binder and the fingertips on back of springs and bow the springs (Figure 3). Insert springs into keyboard and slide the spring extensions to the left under the keylevers. Release the springs and they will drop into place on the keylevers. Pull the binder straight back and the springs will be properly positioned.

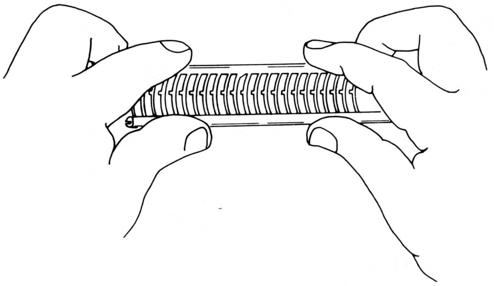
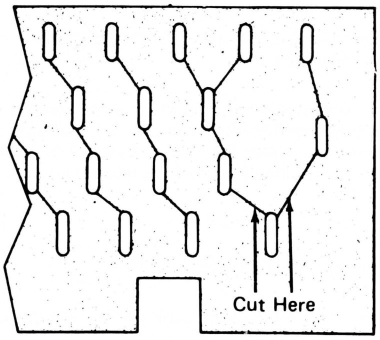


Figure 3

5 SERVICE INFORMATION (1/71)

KEYBOARD INSULATION - REPLACEMENT

When a "Selectric" Typewriter has been given a chemical cleaning, time can be saved if the replacement keyboard insulation (21-103) is first cut between the keybutton stem holes before installing it on the keyboard. (See illustration.)



The keybuttons need not be removed for insulation replacement. Beginning at the left side, position the rear part of the insulation under the rear row of keybuttons. Use caution when stretching the insulation under the remaining keybuttons. Remove all wrinkles, folds and twists from the insulation so no open areas exist in it.

6 SERVICE INFORMATION (CEM 452) (3/81)

DUAL IMPRESSION CAM/MOUNTING BRACKET - INTERFERENCE

There is a possibility of interference between the DI cam (21-426) and the DI cable mounting bracket (21-425) on some "Selectric" II and III machines. This interference is the result of an accumulation of tolerances in the power frame. A washer (P/N 1175868) (23-476) has been added on an as needed basis to correct the interference problem. If this problem is seen in the field, the washer can be added as shown in Figure 1.

Adjustments remain the same.

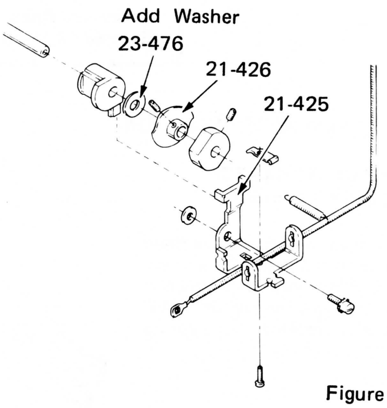


Figure 1

1 SERVICE INFORMATION (CEM 463) (8/81)

SCREWS CHANGED IN CYCLE CLUTCH BRACKET

The screws (21-228) that mount the bracket (21-532) that holds the guide assembly (21-530) have been lengthened. This change was made to eliminate the possibility of the screws stripping.

NOTE: On machines that have this change, there may be some interference when using the Hooverometer to make the "power on" adjustments. The red handle brush (T20-1) or any other suitable tool can be used on these machines.

2 SERVICE INFORMATION (CEM 382) (2/79)

REPEAT ROW FOUR KEYLEVER - PLANT INSTALLED

The row four repeat keylever (21-108) (Figure 1) has been redesigned for greater reliability and to make installation easier. It is now available for **PLANT INSTALLATION** on new machines through Special Engineering Request (SER). An SER must be submitted at the time the new machine is ordered. Plant installation is the recommended procedure.

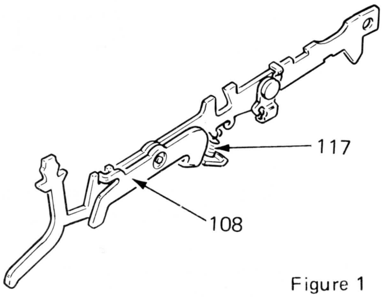


Figure 1

Replacement parts are now available.

CAUTION: Repeat keylevers should not be installed next to each other, e.g., 39 and 40, etc., because of interference between the keylevers.

NOTE: The customer **MUST** be told of the possibility of the last character being a dash.

MARGIN, LINELOCK AND BELL

3 SERVICE INFORMATION (CEM 194) (3/73)

MARGIN LEVERS - BINDING

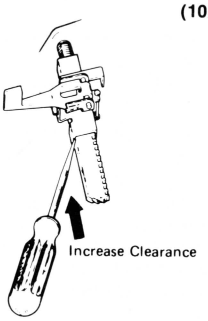
Binding margins and noise can be caused by the machine being too low in the covers. When experiencing this problem, raise the machine so there is a slight clearance between the margin lever and the chrome strip on the center cover.

4 SERVICE INFORMATION (10/68)

BINDING MARGIN STOPS

Binding margin stops can usually be improved by increasing the clearance between the margin stop and margin rack. To make this adjustment, move the margin stops to the far left side to prevent damage to the margin rack.

Polishing the margin rack with abrasive paper can also reduce a binding condition.



5 SERVICE INFORMATION (CEM 311) (3/76)

MARGIN RACK GEAR ADJUSTMENT

When adjusting the margin rack gear (dual pitch) end play, it is necessary to remove all of the motion of the rack within the rail to the left. This can be performed by holding the rail and moving the rack to the left with the right margin slider.

6 SERVICE INFORMATION (10/68)

MARGIN LEVER REPLACEMENT

The margin lever pin can be pushed out of its mounting by use of needlenose pliers. Place one jaw of the pliers on the inside of the bracket and the other jaw on the right end of the pin. Squeeze pliers and the pin will be pushed out. No cutting is necessary and the same pin can be used to mount the new margin lever.

7 SERVICE INFORMATION (10/68)

MARGIN STOP PIN AND SLIDER REMOVAL AND INSTALLATION

1. Disconnect the margin stop spring.
2. Push the margin lever and slider assembly to the rear.
3. Using the three-inch screwdriver, gently pry the slider pin from the margin stop.
4. The margin lever and slider assembly may now be removed as a unit from the margin stop.

A new pin and slider assembly can be installed without cover removal. Hook the "T" end of the new slider in front of the margin stop where it normally belongs with the pin end aligned above the "U" slots in the margin stops. Pressing down on the pin end with your thumb will push the pin into the assembled position. Use your forefinger to support the rack.

CAUTION: The margin rack must be held from rotating beyond the margin release position.

8 SERVICE INFORMATION (10/68)

BELL MOUNTING STUD REPLACEMENT

The following techniques may prove successful in replacing broken bell mounting studs on machines where the studs have been installed by rivets into the left-hand keyboard side plate:

1. Order P/N 1141117 - bell mounting stud (old-style) and P/N 1118361 - grip clip retainer.
2. Break off remainder of stud or use a file to make it flush with side plate as necessary.
3. Center punch and drill hole through broken stud using no. 28 (3,57 mm) drill bit.
4. Tap hole in side plate with 6-32 tap.
5. Install replacement stud in side plate.
6. Attach bell using grip clip retainer, P/N 1118361.

1 SERVICE INFORMATION (CEM 343) (5/77)

MARGIN RACK TOGGLE SPRING-REMOVED

The margin rack toggle spring (10-28) has been removed on all Dual Pitch "Selectric" IIs. The escapement rack gear toggle spring (07-24) has been replaced with a stronger spring to provide the necessary tension to toggle both the escapement rack and margin rack. When either the margin rack or escapement rack toggle springs require replacement on machines with both springs, remove both springs and install the stronger escapement rack spring.

Plant installed above approx. S/N: 8X3 - 1736931, 8X5 - 3268887.

2 SERVICE INFORMATION (CEM 384) (2/79)

POINTERS, "SELECTRIC" II - REDESIGNED

Pointers (09-136) (10-37) for the "Selectric" II have been redesigned (Figure 1). The universal pointers are narrower and can be used on either dual or single pitch. Teeth have been added to the bottom to reduce chances of the pointer coming out of its holder. The new pointers are compatible with current pointer holders (09-140) (10-41).

The current part number for dual pitch pointers will be used for the new universal pointers. Existing stock of Level 1 pointers will be used until depleted. Orders for Level 1 pointers will be substituted to the Level 2 universal pointers when parts become available.

Note: Pointers for machines with factory sound are not affected by this change.

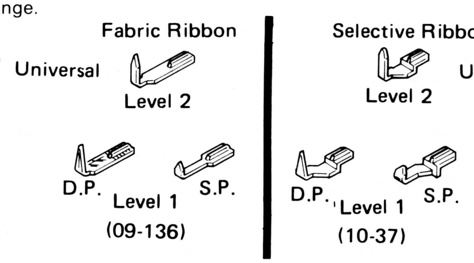


Figure 1

3 RELIABILITY (CEM 387) (2/79)

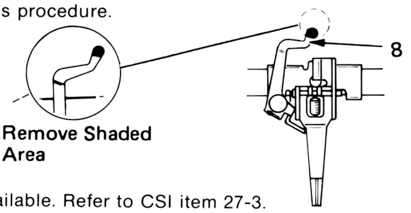
BELLRINGER BELLCRANK - UNWANTED CORRECTION

To stop unwanted correcting tape feed when typing through right-hand margin.

As the carrier moves past the right-hand margin, the bellringer bellcrank (10-08) may contact the inhibitor actuator bellcrank (26-126) when the margin release is activated. This can cause the correcting tape to feed a few spaces.

Remove (stone, file or grind) approximately .050" (1,27 mm) of the bellcrank in the area shown (Figure 1) to provide minimal clearance between the bellringer bellcrank (09-106), (10-08) and the inhibitor actuator bellcrank (26-126). (The tip of the bellringer bellcrank should be kept round when removing material). After making this change, check adjustment of the linelock bracket (09-5), and the linelock bail finger (09-80). Redesigned parts will be available at a later date to eliminate need for this procedure.

Note: The bellcrank is a hardened part and forming is NOT RECOMMENDED.



Redesigned parts are now available. Refer to CSI item 27-3.

4 SERVICE INFORMATION (CEM 391) (5/79) (CEM 374) (10/78)

UNEVEN LEFT MARGIN

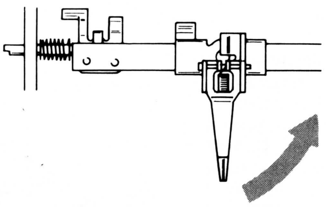
Checks and adjustments to help resolve difficult overbank problems when margin, carrier return, and escapement adjustments appear correct.

Uneven left margin.

If failure occurs at ANY position of the left margin stop, follow procedures in Section A. If the failure occurs only between 0 and 30 on the margin scale, follow procedure in Section B.

Note: The symptoms and solutions listed are the most common, but each problem is unique and may require use of Section A and/or B.

A. 1. Carrier Return should be adjusted to specifications in the APM, note the following:
  a. Pawl Clearance - Adjustment for minimum pawl clearance. PAWL MUST NOT DRAG while returning.
  b. Overbank - Check the overbank guide adjustment while biasing the tip of the LH margin set lever in a counterclockwise direction. This simulates the dynamic forces present during a machine powered carrier return. Ensure the switch pitch gear (DP) (10-29) or collar (single pitch) does not interfere with this adjustment.



  c. Torque Limiter - Adjust the torque limiter to low side of specifications for minimum return force with positive drive.

2. Margin and Linelock should be adjusted to specifications in the APM, note the following:
  a. Margin Rack Gear (10-29) - Make this adjustment while holding rail to right and remove play in rack to left.

B. Adjust the escapement mechanism as outlined in the APM, with the following additional checks and adjustments.
  1. The escapement rack bracket (DP machines) (07-20) must be positioned to prevent bowing of the escapement rack.

     Loosen switch pitch selector gear (07-31) to relieve pressure on the escapement rack gear. Loosen bracket (7-20) and allow escapement rack to assume natural rest position. Tighten bracket (7-20) without disturbing escapement rack rest position. Readjust pitch selector gear.

  2. Check for defective escapement and margin racks. Working surfaces of 10 and 12 pitch rack teeth should line up at position zero, and should repeat at 1/2 inch intervals therafter. This interval may be off as much as .042" (1,07 mm) on the defective racks.

Note: The carrier buffer (02-15) may be installed to increase carrier stability on marginally reliable machines. This is not recommended as a substitute for replacement of worn parts in the print sleeve/shaft area. Parts should be replaced if worn and the buffer used only on machines that appear unreliable after the above steps were taken.

5 SERVICE INFORMATION TIP (1-82)

OVERBANK ADJUSTMENT — SIMPLIFIED

The following method may be used to facilitate making the overbank adjustment.

1. Move the left hand margin away from the final stop (9-61, 10-17).
2. On dual pitch machines place the machine in the 12 pitch mode.
3. Backspace or carrier return the carrier into the left-hand margin.
4. Loosen the overbank guide mounting screw (9-7, 10-9), on dual pitch machines also loosen the margin rack gear screw(s) (10-26), allowing the margin rack and/or rail to come to rest.
5. Hold the overbank guide (9-57, 10-10) against the bracket (9-71, 10-13) and tighten the mounting screw.
6. Adjust the margin rack gear for .001"-.004" (0.03-0.10 mm) clearance on dual pitch machines.
7. Check for .000"-.003" (.000-0.08 mm) between the left hand margin and the carrier stop latch (9-5, 10-34).

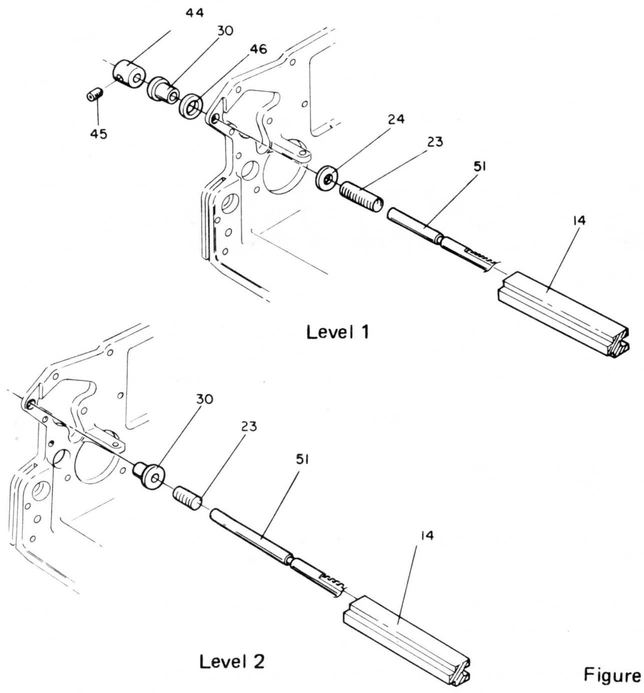
NOTE: The final margin stop, CR clutch unlatching, and/or the CR-TAB interlock adjustments may be affected and should be rechecked.

1 SERVICE INFORMATION (CEM 408) (12/79)

MARGIN RACK - SINGLE PITCH (ROTARY B/S)

Two spacers (10-46,24), a collar (10-44) and a setscrew (10-45) have been eliminated from the single pitch margin rack. This has been done by using a shorter spring (10-23) and installing the bushing (10-30) from the opposite direction.

It is no longer necessary to use these parts (10-24, 44, 45, 46). If replacement of these obsoleted parts is necessary, the new shorter spring (10-23) should be used and the parts assembled as in Figure 1 (Level 2).



Level 1

Level 2

Figure 1

2 SERVICE INFORMATION (CEM 411) (1/80)

MARGIN RACK GEAR

A limited number of dual pitch machines will be shipped to the field with 6-32 screws (P/N 1175107 parts package 01), instead of the standard 4-40 screw (P/N 1175102). Margin rack gears will be black and the screws will require using a number 6 fluted wrench.

3 SERVICE INFORMATION (CEM 420) (3/80) (CEM 449) (1/81)

BELLRINGER BELLCRANK - REDESIGNED

The bellringer bellcrank (09-106, 10-8) has been redesigned as shown in Figure 1. The paddle portion has been lengthened on 7XX, 8XX and 670X parts and an extension added to prevent the bellcrank from slipping over the top of the linelock bail on 8XX and 670X machines (09-80). The tip of the bellcrank has also been modified to eliminate interference with the inhibitor actuation bellcrank (26-126) while typing through the right-hand margin on correcting machines, which can result in unwanted correct tape feed operations.

The redesigned parts are compatible with all levels of machines. Old level parts will no longer be available.

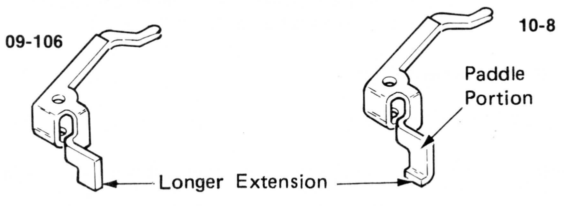


Figure 1

MOTOR AND DRIVE

4 SERVICE INFORMATION (CEM 101) (5/71) (CEM 165) (5/72)

MOTOR REPLACEMENT PROCEDURE

The following is a motor replacement procedure for machines built before the overhead lead motor.

Presently, all 115 volts 60 Hz motors are the overhead lead type. When replacing an older motor with this motor, transfer the old mounts to the new motor. Order two mounts, (11-41) (P/N 1174096) if the old motor has hexagonal mounts. Use either of the following procedures according to model and level of machine.

1. Place wire through power frame and connect to the same points as the old motor (Figure 1).

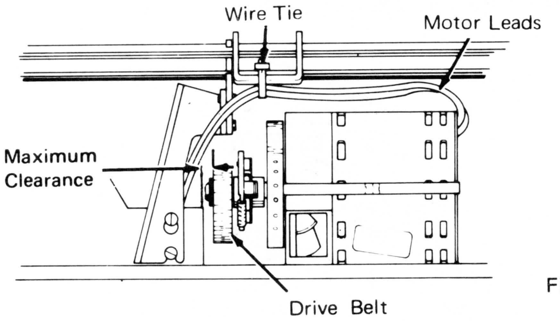


Figure 1

2. Cut the old motor leads at the motor. Run them under linecord or cord clip and attach to new motor leads. (Figure 3).

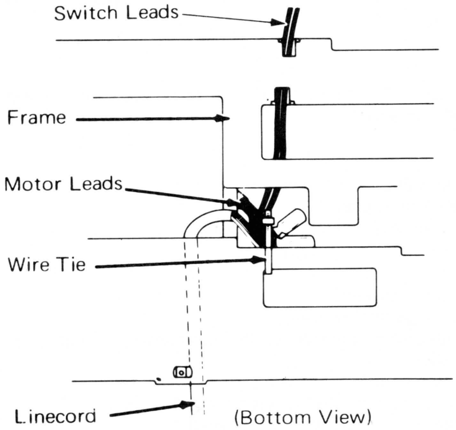
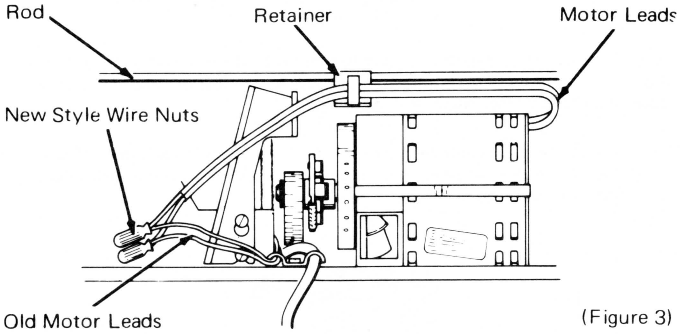


Figure 2

Secure leads to power frame with wire tie (Figure 2).



(Figure 3)

The overhead motor leads must be held up and out of the motor clutch. This can be done with a wire tie or a retainer clip. The clips should be used when there is a possibility that the motor leads may slide into the motor clutch.

Placing the wires past the rotate latches is not recommended. The motor leads are now much thicker and may interfere with mechanisms close by.

Use of this motor on pre-double insulated machines does not raise them to double insulated standards.

CAUTION: New wire nuts (11-70) (yellow) with the safety skirt must be used. Old style wire nuts do not meet present safety standards.

1 SERVICE INFORMATION (CEM 311) (3/76)

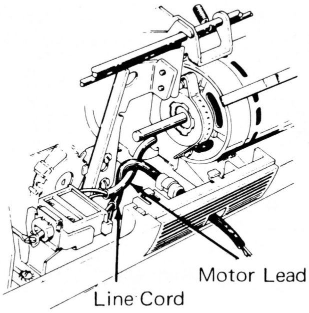
MOTOR - THERMAL PROTECTED

The "Selectric" motor is equipped with an internal thermal coupler that acts as a circuit breaker when it becomes overheated due to an excessive load on the motor. If a motor will not start due to a bind in the drive mechanism, the bind should be removed. Next, the motor should be allowed to cool to give the coupler time to close. This will prevent unnecessary replacement of the motor.

2 SAFETY

LINECORD AND SWITCH LEADS - ROUTING (CEM 52) (7/70)

When replacing linecord or switch on machines with motors without overhead leads, be careful to place the linecord over the top and around the motor lead insulating tube. This is necessary to prevent the insulating tube from coming in contact with the motor clutch or drive belt.



3 SERVICE INFORMATION (CEM 268) (9/74) (CEM 389) (3/79)

IDLE NOISE

Idle noise on "Selectric" Typewriters can be minimized by making the following checks and adjustments:

A. BINDS
   1. Cycle clutch end play/overthrow.
   2. Operational shaft end play.
   3. Shift clutch spring adjustment/lubrication.

B. MOTOR
   1. Drive belt tension/tracking.
   2. Motor should be parallel to frame.
   3. Tap motor shell and end plates lightly with hammer to ensure motor bearings are aligned.
   4. Inspect condition of plastic bushing.
   5. Ensure weight on clutch pawl is not hitting drive belt.
   6. Inspect condition of rubber motor mounts.
   7. Ensure mounting brackets are not pressing in on motor.
   8. Remove the metal shipping rings located between motor and rubber mounts.

One procedure to remove the rings is to first break them and then twist into a roll with a "T" bender or duckbill pliers. Be sure to check the rubber mounts for proper installation after removing the rings.

   9. Check for clearance between the rubber shipping bumper (11-511) and the motor. If there is no clearance, reposition the motor and/or remove the bumper (Figure 1).

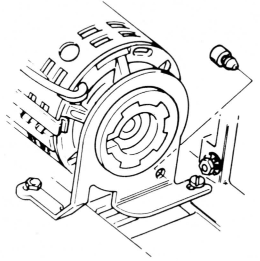


Figure 1

One procedure to remove the bumper is to cut the external tip off and push the other end out with a screwdriver.

   10. The motor mounting bracket slots can be reduced approximately 1/16" (1,59 mm) with a file to relieve pinching of the rubber mounts (Figure 2).

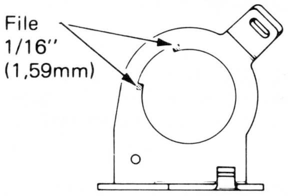


Figure 2

C. COVERS
   1. Ensure machine does not contact any part of the covers - copy lever, switch pitch lever, etc.
   2. Machine should be level in the covers and not hitting on the bottom cover.
   3. The copy control lever shaft should not be touching the A-frame assembly.
   4. The service feet should not extend through the bottom cover.
   5. Sound B/M can be used to reduce excessive noise and cover vibration.

4 SAFETY

MOTOR HEAT (1/74)

The temperature warning label is no longer required. However, the operating temperatures of the shaded pole motor are high enough to burn the hand if handled immediately after use. A folded shop towel can be used for protection.

5 SERVICE INFORMATION (1/74)

STATIC SPARKS IN AREA OF MOTOR

Static discharge sparks may be noticed on any product with rubber drive belts where the motor is insulated from the power frame.

The condition does not cause a safety problem. If it is unwanted, it can be stopped by replacing either motor mount.

The static build-up was noticed in OPD products in early 1968. At that time, the specifications were changed on all motor mounts so that they were just conductive enough to prevent static build-up.

Do not use a resistor, grounding jumper wire or any other fix other than the cushion ring change to eliminate this condition. Make change only where static discharges are noticed between motor and power frame. Normal static discharges, due to build-up on clothing, furniture, etc., which discharge to machine frame or any other metal object, will be unaffected by this change.

6 SERVICE INFORMATION (10/63)

SPIRAL GROOVE MOTOR SHAFT

The plastic bushing motor pulley can be used on motors that have the spiral groove shaft. It was previously believed that the grooves would raise burrs on the plastic bushing. Caution should be exercised when installing the bushing and pulley to be sure that the bushing is not burred, which would result in a clutch failure. When the current level motor pulley is used, it is recommended that the complete motor clutch Bill of Materials be installed.

7 SERVICE INFORMATION (10/68)

MOTOR CLUTCH SPRINGS — TENSION

Do not shorten the centrifugal motor clutch pawl springs (11-45). This allows the pawls to engage at too high a motor speed causing them to bounce on the lugs of the motor pulley. This causes round edges on the pawls.

8 SERVICE INFORMATION (3/71)

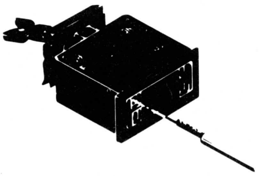
MOTOR PULLEY AND BELT WEAR

When replacing a drive belt that has worn or stripped out cogs, also replace motor pulley (11-48).

1 SAFETY

QUICK WIRE SWITCHES - LOOSE WIRES **(CEM 67) (9/70)**
(CEM 239) (1/74)

When experiencing electrical or switch problems on machines with the "quick wire" connection switches, it is possible that the wires are not being held firmly in place. If this condition exists, replace the switch.



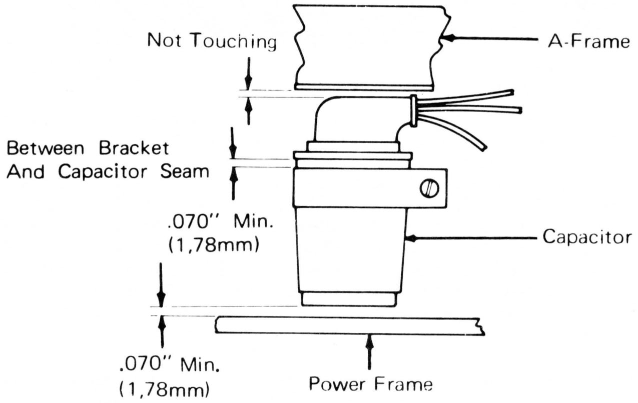
2 SAFETY

CAPACITOR BOOT - "A"-FRAME PAPER FEED **(CEM 186) (10/72)**
(CEM 238) (1/74)

On "Selectric" Typewriters with A-frame paper feed and capacitor start motors, the capacitor boot may touch the A-frame.

If the capacitor is positioned too high, it can cause the rubber boot to come into contact with the lower extension of the A-frame. If the boot should wear through, the possibility of an electrical shock exists.

Ensure that the capacitor is properly positioned.



3 SERVICE INFORMATION (CEM 176) (8/72)

RECONDITIONED "SELECTRIC" TYPEWRITER - UL DOUBLE INSULATED

All "Selectric" Typewriters reconditioned as of 3-3-72 meet UL double insulation standards/requirements which are:

1. Holes in bottom cover where the motor is exposed are plugged.
2. White tubing is placed over the motor leads and is held in place by an additional piece of shrink tubing.
3. The grill vent has the "gate." This prevents the linecord from resting on cover or powerframe.
4. A patent label containing the following:
   a. The words "double insulated" use only exact replacement parts.
   b. The UL control number 286A.
   c. The word "listed."
   d. The UL Symbol.

The current production "Selectric" Typewriter motor (11-40) is considered an exact replacement part for any reconditioned "Selectric" Typewriter.

Patent labels and stickers remain the same as production machines.

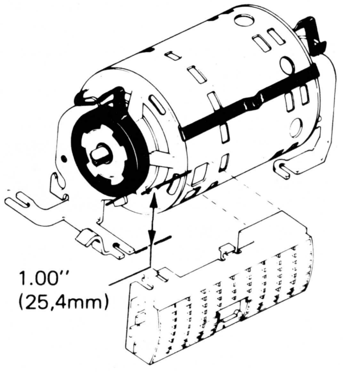
Double insulation cannot be field installed.

4 SERVICE INFORMATION (CEM 122) (10/71)

MOTOR AND VENT GRILL - REDESIGNED

Some machines were manufactured using a motor with the no exhaust snout. This motor requires a redesigned vent grill for proper direction of motor heat.

If removal and reinstallation of motor is necessary, rotate the motor so that the top of the upper exhaust opening is 1.00" (25,4 mm) above the bottom of the motor bracket. This ensures that the heat from the motor will be directed out of the machine. If motor replacement is required, use the standard motor (11-40).



New grill is compatible on all machines with snap-off covers.

5 SERVICE INFORMATION (CEM 378) (1/79)

MOTORS

Some 115V 60 Hz "Selectric" III motors have been used in producing "Selectric" II Typewriters (Figure 1). These motors are identical to the standard 115V 60 Hz double insulated motor except for the longer shaft on the left-hand side and a white identification label on the underside of the motor. If replacement is required, use the standard motor (11-40).

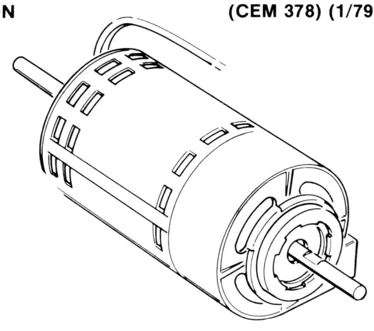


Figure 1

6 SERVICE INFORMATION (12/79)

MOTOR BINDS

Motor failures occurring because of the binds in the motor shaft can be caused by misaligned bearings. The bearings are a self-aligning type, and tapping lightly on the motor end bells and shell may correct the problem (Figure 1).

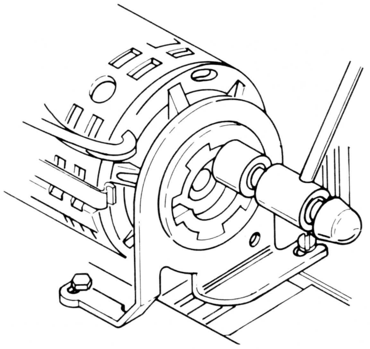


Figure 1

7 RELIABILITY (CEM 405) (11/79)

MOTOR PULLEY AND PAWLS - DEFECTIVE

If a machine locks up or will not start due to failure of motor pawls to disengage from the motor pulley, check for a minimum clearance of .005" (0,13 mm) between the motor pawls and the steps of the pulley. If this clearance does not exist, replace the motor pawls (11-43) and motor pulley (11-48).

Note: This applies to the one-piece pawl assembly only.

Between approx. S/N: Type 6121 (7X1) - 0797028 — 0853313; Type 6126 (8X3) - 5023017 — 5126951, (8X5) - 6068040 — 6388812.

Recovery Code
Expired 9-1-80

1 SAFETY

MOTOR LABEL (CEM 418) (3/80)

On Canadian-built 895 machines there is a possibility of the motor label adhesive failing. The label could curl up and be near or touching the tab rack, reducing the effectiveness of the protective insulation system. If this condition exists, remove the label. It is not necessary to replace the label.

NOTE: Removal of the label may cause the motor to shift position. Recheck motor position.

Between approx. S/N: 4514800 — 4864161.

2 SAFETY

TRANSFORMER HOUSING AND LINE CORD PLATE - WIRE TIE (CEM 423) (5/80)

Early level dual pitch "Selectric" IIIs have a wire tie (11-606) to hold the line cord plate (11-600) and transformer housing (11-601) in place during shipment. If it is necessary to remove the wire tie to service the machine, the wire tie need not be replaced. However, if the transformer housing has a **BLACK** line cord plate (11-600), it **MUST** be replaced with a **GRAY** line cord plate (11-600) which has additional lugs to hold it in place.

Newer level machines have the **GRAY** line cord plate.

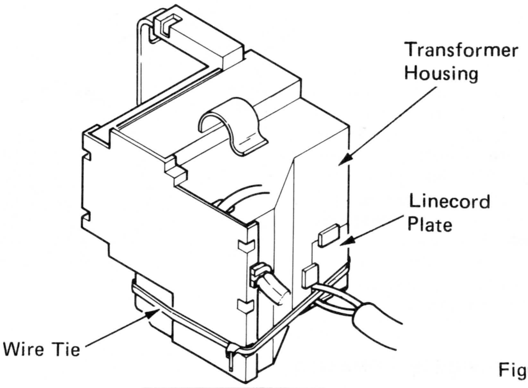


Figure 1

Recovery Code Expired 9-10-81

3 SERVICE INFORMATION (6/80)

MACHINE LOCK-UP/STALLING

Machine lock-up and stalling problems may be traced to excessive belt tension and/or lack of lubrication of the motor shaft and pulley. Before considering replacement of the motor or other parts, make sure the drive belt tension is correct. Ensure the motor shaft is free of binds, and rotates easily within the motor pulley. If necessary, lubricate the motor shaft with No. 23 grease.

4 RELIABILITY (CEM 436) (9/80)

MOTOR PAWL ASSEMBLY - WASHER ADDED

Some machines have nylon washers added to the motor pawl assembly (Figure 1). If experiencing start problems, check for a bind between the washer and the pawls. To eliminate the bind, remove the washers.

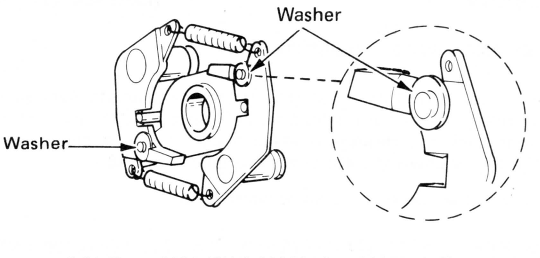


Figure 1

Approx. S/N: Type 6121 (7X1) 0885914 — 0907710; Type 6126 (8X3) 5200758 — 5250192; Type 6126 (8X5) 6603755 — 6730476; Type 6701, 0000001 — 0000095; Type 6702, 1000001 — 1003567; Type 6703, 2000001 — 2004383; Type 6704, 3000001 — 3000761; Type 6705, 4000001 — 4038927.

5 SERVICE INFORMATION (CEM 437) (9/80)

TRANSFORMER REPLACEMENT - WIRE ROUTING

There is a possibility of interference between the transformer secondary wires and the gear train. To reduce this possibility when replacing the transformer, the secondary wires should be placed on the outside of the Tab/Set Clear link. Figure 1 shows the correct wire path with the machine in the service position. Some early production machines have a metal clamp to secure the wires. Wire ties may be used if necessary.

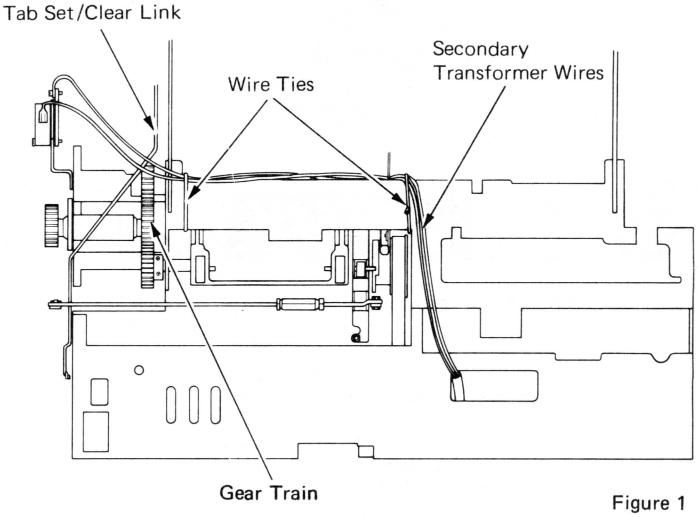


Figure 1

6 SAFETY

MOTOR AND DRIVE DOUBLE INSULATION SYSTEM (CEM 454) (4/81)

SAFETY INFORMATION: The Double Insulation System is designed to protect the customer from possible electrical shock. This is accomplished by isolating all hazardous voltage by at least two separate and unrelated levels of insulation (Figure 1). The Double Insulation System does not fully protect the Customer Service Representative. The possibility of an electrical shock is increased because there is only one level of insulation between the Customer Service Representative and the live parts of the motor when the covers are removed and CSR is servicing the machine in this area. The motor shell is not double insulated, but has only basic insulation as indicated in (Figure 1) 1st level of insulation. The second level of insulation consists of the motor mounts (11-22).

CSRs must be aware that on 2 wire double insulated machines, an insulation fault in the motor will result in a shock if the motor shell is touched along with a ground source.

Turn the motor switch off prior to touching the motor shaft or shell. Do not hold motor in your hand to test. (To check for a faulted motor, make a resistance check between the motor shell and the motor leads, using your Volt-Ohm Meter. A reading of infinity indicates good insulation.)

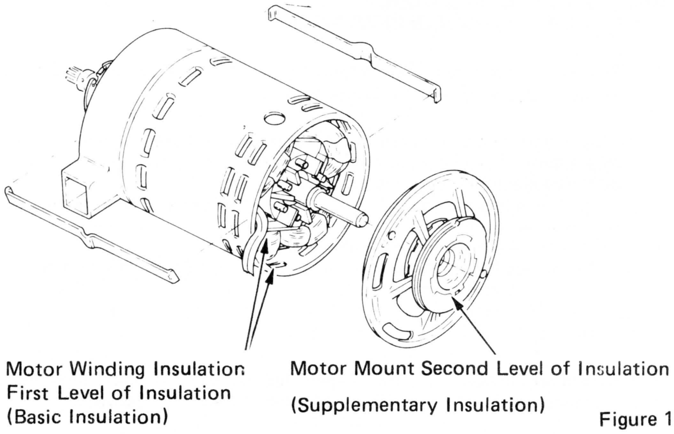

Motor Winding Insulation First Level of Insulation (Basic Insulation)
Motor Mount Second Level of Insulation (Supplementary Insulation)

Figure 1

NOTE: On 3 wire machines, if the ground strap is not present between the motor and frame (or is not properly installed), the risk of a shock is somewhat higher than with Double Insulated machines because the machine frame is grounded.

OPERATIONAL CONTROL

1

RELIABILITY (CEM 158) (5/72)

INTERPOSER LATCH - BURR

Extra operational functions caused by the latch pawl slipping off the latch plate may be caused by a burr on the interposer latch.

Install new interposer latch.

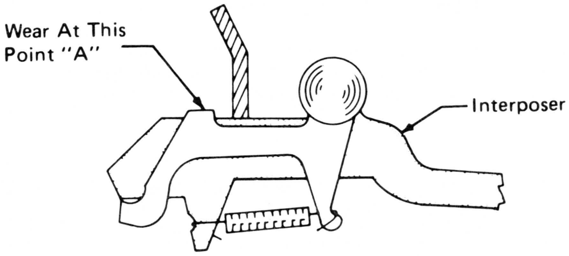
Recovery Code
Expired 5-1-73

2

SERVICE INFORMATION (CEM 221) (10/73)
(CEM 251) (4/74)

UNWANTED OPERATIONS - RANDOM OR EXTRA

Unwanted operations may sometimes be caused by a worn latch on an operational interposer. A small amount of wear at point "A" may cause the interposer to repeat after a wanted operation or come off due to vibration during normal typing. This results in an unwanted operation. The latch plate should also be checked for wear and replaced if any signs of wear are found.

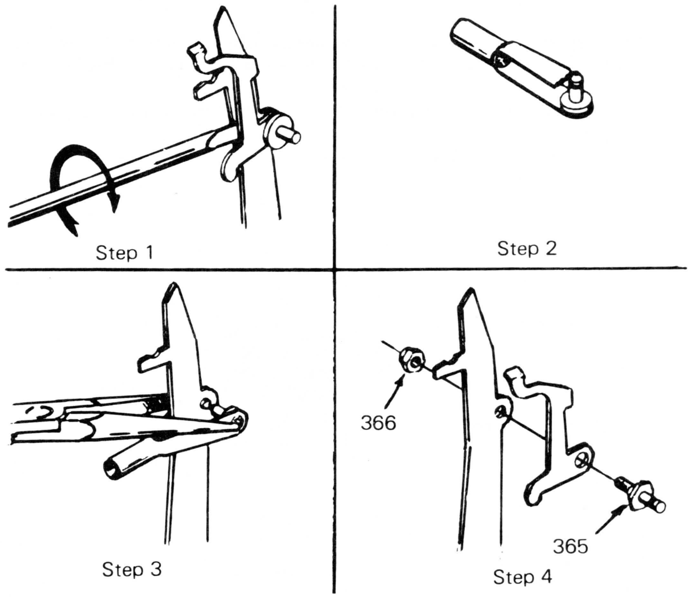


3

SERVICE INFORMATION (10/68)

OPERATIONAL LATCH REPLACEMENT TECHNIQUE

A procedure for removing the rivet from the interposer, when the rivet is stuck in the interposer, follows: Break the head off the rivet, and take a small locking clevis from parts packet no. 6. Cut the hole side just below the pin hole. Insert the clevis with the pin side on the RH side of the rivet and squeeze the clevis with the needlenose pliers. This will usually force the rivet out of the interposer. It may be necessary to use a stone to remove the rivet on the LH side and force the rivet out the RH side.

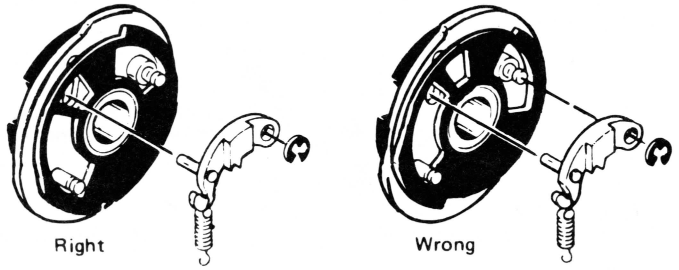


4

SERVICE INFORMATION (10/68)

OPERATIONAL CAM PAWL INSTALLATION

Caution should be used when installing an operational cam pawl to prevent machine lock-up or cam release lever breakage.

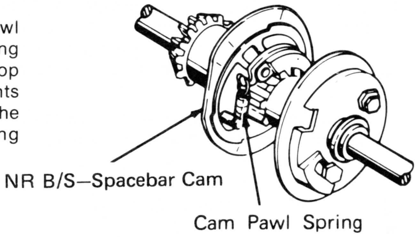


5

SERVICE INFORMATION (CEM 108) (8/71)

OPERATIONAL CAM PAWL SPRING INSTALLATION - LEFT OPERATIONAL CAM

When replacing a cam pawl spring (25-40), install the spring with the open side of the loop toward the cam. This prevents spring breakage caused by the loop of the spring working against the cam wheel.



6

SERVICE INFORMATION (1/74)

LATCH SPRING INSTALLATION

Backspace-Spacebar Latch Spring: New style backspace-spacebar latch springs (25-209) must be installed with the body of the spring up to prevent the spring from breaking or slipping off the interposer.

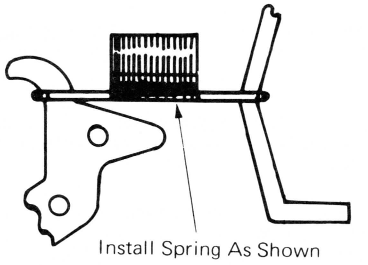


Figure 1

7

SERVICE INFORMATION (CEM 240) (1/74)

OPERATIONAL CAMS NOT RELEASING

Failure of an operational cam to release may be caused by a burr on the C-clip (25-203) that positions the operational cam release arm (25-205, 239).

If experiencing intermittent operational failures because the cam fails to release, replace both C-clips.

8

SERVICE INFORMATION (10/68)

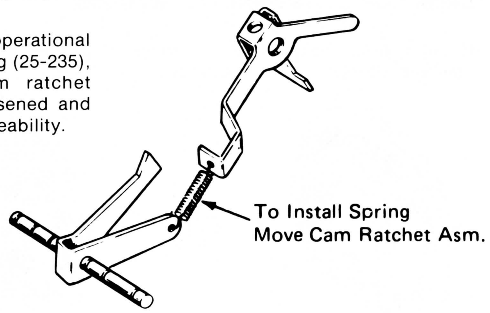
PINION WEAR

Tab/Carrier Return Pinion: The working surfaces of the cord drum, tab pinion gear, and the carrier return pinion gear should be free of lubrication. Lubrication of these points will cause erasure build-up and cause wear of the pinion gear teeth.

1 SERVICE INFORMATION (10/68)

CHECK PAWL SPRING INSTALLATION

When installing an operational cam check pawl spring (25-235), the operational cam ratchet assembly can be loosened and moved to allow serviceability.



2 SERVICE INFORMATION (CEM 70) (10/70)

OPERATIONAL CAM ASSEMBLY SETSCREW

Setscrew - Cone pointed: To prevent the cam and ratchet assembly from coming loose on the operational shaft, a cone pointed setscrew, (25-36), is being used on XX3 and XX5 machines. When readjustment of the cam and ratchet assembly is necessary, it may require a slight rotation of the operational shaft since the cone pointed setscrew makes an impression further into the operational shaft than the previous cup-pointed screw.

This change has not been incorporated in the 7X1 because of the frequent readjustment of this assembly, since it determines the endplay of the operational shaft.

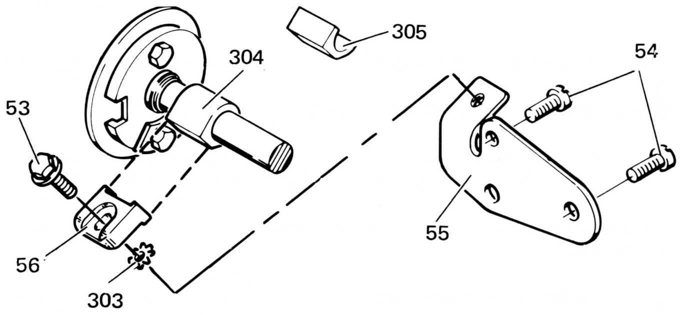
3 SERVICE INFORMATION (CEM 289) (5/75) (CEM 311) (3/76)

OPERATIONAL SHAFT SUPPORT - NEW

The field installable operational shaft support B/M (25-307) uses a cut-away bearing (25-305) which can be installed without removing the operational shaft.

This support replaces old level support. Order the bracket, support, lockwasher and bearing when replacing the bracket or support on the old style.

Install the ears on the support to both sides of the flat on the bearing using slight pressure. (Do not force the support enough to bend the operational shaft.) Then tighten the screw. Lubricate on each service call.



4 SERVICE INFORMATION (10/68)

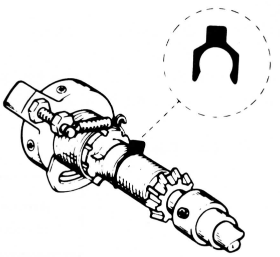
TORQUE LIMITER LUBRICATION

The torque limiter may be lubricated without disassembly by placing grease on the end of the torque limiter spring in the grooves of the arbor. When this is completed, hold the carrier during a return operation. The spring will attract the grease, providing enough lubrication.

5 SERVICE INFORMATION (10/68)

TORQUE LIMITER AND TAB GOVERNOR

Simplified Adjustments: Position the carrier return pinion for proper gear engagement with the escapement drum. Insert the .005" (0,13 mm) cycle shaft shim (P/N 1280822) between the CR pinion and the torque limiter arbor and push the torque limiter arbor up to the shim. Tighten the torque limiter setscrews. The proper adjustment is now made with a minimum of clearance and no binds. This same procedure can be used for adjustment of the tab governor pinion and collar.



6 SERVICE INFORMATION (CEM 345) (12/77)

LATCH WHEEL - WEARING

If experiencing a repeating spacebar and backspace operation, check the adjustment shown in Figure 1. Insufficient bite of the clutch release arm (25-239) to the clutch wheel (25-44) can cause premature wear. A repeating operational cam may look like escapement failures (skipping or crowding of characters). Check the latching surface on the clutch wheel; if the latch is rounded, the operational cam on the latch ring should be changed.

Check adjustment by manually releasing the latch from the bottom of the machine. Do not check this adjustment by releasing the spacebar as the load of the spacebar interposer will cause an incorrect reading.

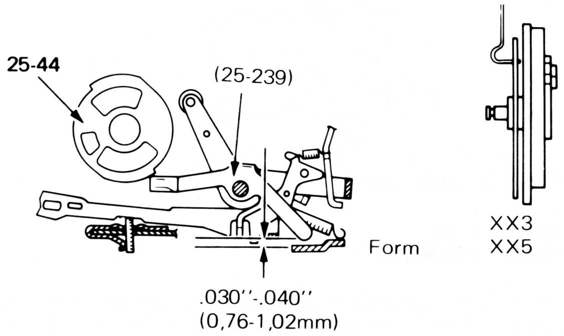


Figure 1

7 SERVICE INFORMATION (CEM 351) (9/77)

RETAINER CLIP (RESTORING BAIL)

When replacing interposer restoring bail (25-216), be sure to reinstall retainer clip (25-217) properly as this is a spring loaded clip to hold the bail tight.

If the clip is installed backwards, there will be lost motion in the restoring bail (Figure 1).

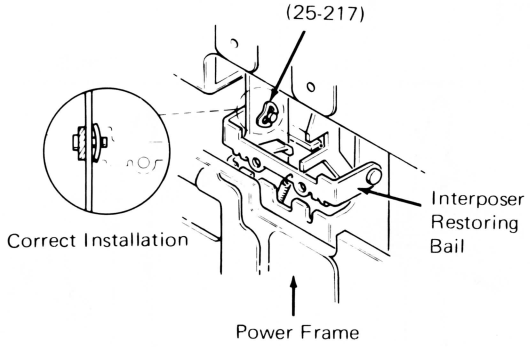


Figure 1

1

RELIABILITY (CEM 362) (5/78)

TORQUE LIMITER ARBOR - DEFECTIVE

Some machines may have reached the field with edge of the torque limiter arbor (25-11) rounded (Figure 1).

The rounded edge may allow the torque limiter spring (25-09) to drop between the hub (25-03) and arbor.

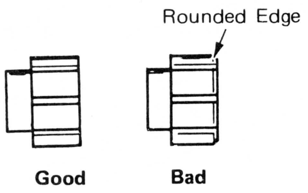


Figure 1

Change the arbor.

S/N: 8X5 - 3688555—3721131; 8X3 - 1921645—1933765.

Recovery Code
Expired 5-3-79

2

RELIABILITY (CEM 379) (1/79)

TORQUE LIMITER HUBS - DEFECTIVE

Some machines have been manufactured with a defective torque limiter hub (25-003), torque limiter screws (25-004) and/or bad end play adjustments.

1. Dropped loop on C/R pinion spring.
2. Dropped loop on torque limiter spring.
3. Worn C/R pinion C-clip groove.
4. C/R pinion C-clip missing.
5. Unresolved slow carrier return (adjustments appear correct).

Replace torque limiter hub (25-003), and screws (25-004). Examine and replace other operational shaft parts as necessary.

S/N: 721 - 0778890, 0797028; 8X3 - 1989988, 5023017; 8X5 - 3867695, 6068040.

Recovery Code
Expired 12-1-79

3

SERVICE INFORMATION (CEM 421) (5/80)

TORQUE LIMITER HUB AND SPRING CLAMP - REDESIGNED

These parts were redesigned to reduce torque limiter spring (25-9) breakage and the loosening or shifting of the clamp (25-5). An extension has been added to the tail of the torque limiter spring clamp (25-5), which will fit under a lug added to the torque limiter hub (25-3).

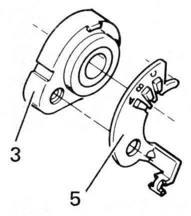


Figure 1

Replace the hub and clamp when necessary. The redesigned parts are compatible with previous level parts.

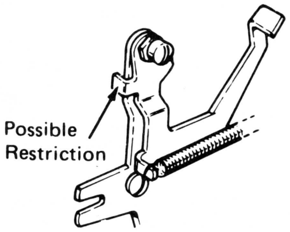
PAPER FEED

4

SERVICE INFORMATION (1/71)

PLATEN LATCH ADJUSTMENT

The platen latch adjustments should be checked when checking index or paper feed adjustments. The latch lug can bind off the latch and allow the platen to move up out of position, giving an uneven writing line and index failures.



Form lug to remove interference.

5

SERVICE INFORMATION (1/71)

PLATEN "WALKS" OUT OF LATCHES

Platen Bushing Binding (12-22): Binding platen bushings may cause the platen to move out from the platen latches. Clean both the bushings and platen shaft and relubricate.

6

SERVICE INFORMATION (1/71)

PLATEN DAMAGE

If the platen is installed in the "Selectric" Typewriter without first installing the feed rolls and deflector, it is likely that the feed roll support arms will cut the rubber covering on the platen.

Platen damage can be caused by typing on the platen without an element on the machine. The rotate detent can make contact with the platen. This can also cause excessive rotate detent side play.

Internal platen damage can result if undue rotational pressure is applied on the platen knobs.

7

SERVICE INFORMATION (CEM 191) (1/74)
(CEM 465) (8/81)

PAPER FEED "A"-FRAME

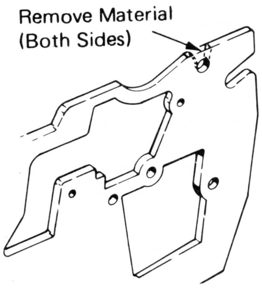
All "Selectric" Typewriters are being manufactured with a redesigned paper feed assembly. This paper feed uses an A-frame for support instead of tie rods. It is available with eccentric index overthrow stop only.

The complete A-frame assembly can be installed on all level "Selectric" Typewriters. To convert to A-frame, order the appropriate assembly (22-228) and (12-22) and change B/M (22-229). These contain necessary parts and installation instructions.

For dual pitch machines below approximately S/N 8X3 - 1081654, 8X5 - 2095803, order half-backspace parts, 07-20, 61, 62, 63, and 19-57. For machines equipped with pinfeed platen, order bushing (49-115).

Estimated Conversion Time: .8 hr.

Installation Note: Below approx. S/N 7X1 - 5768765, 7X3 - 5184566, 7X5 - 5535678 the power frame has a hole instead of a slot for the multiple copy shaft. To install the paper feed assembly, the multiple copy shaft must be removed and reinstalled in the holes or, the power frame must have material removed as shown (Figure 1).



(Continued On Next Page)

The part numbers for platen detent assemblies remain the same. Some earlier level detents may have a lug as shown (Figure 2). In order to use with the A-frame paper feed, break off the lug.

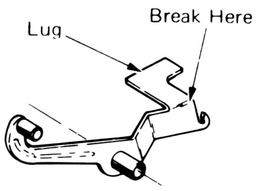


Figure 2

When replacing the A-frame asm. on pre-eccentric overthrow stop machines, it may be necessary to remove some material from the power frame with a file or other suitable tool in the area directly below the eccentric overthrow stop. This eliminates interference with proper platen height adjustment on the right side.

1 SERVICE INFORMATION (CEM 210) (7/73)

PLATEN REMOVAL - CORRECTING "SELECTRIC"

The platen should only be removed when the carrier is positioned at least 20 spaces from either end. Removing it with the carrier closer to the ends may cause damage to the correcting mechanism.

2 SERVICE INFORMATION (CEM 210) (7/73)

PAPER BAIL SHAFT - DEFECTIVE

Some paper bail shaft screw holes may be out of line, resulting in paper not being held tightly against the platen. If this condition is found, replace the shaft (22-53).

3 SERVICE INFORMATION (1/71)

PLATEN CORE KEY - PINFEED PLATEN

A new key (49-132) to hold the platen core to the pinwheel.

If uneven line spacing occurs:

1. Remove roll pin from right-hand pinwheel assembly.
2. Install new nylon key in pinwheel assembly as shown in Figure 1. The long side must point toward the pins.

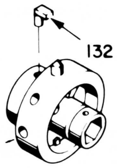


Figure 1

The key is slightly larger than the hole in the pinwheel. Use a hammer to install it.

3. If the keyway in the platen core is worn, a new core must be installed.

4 SERVICE INFORMATION (CEM 105) (6/71)

PINFEED PLATEN CORES - LEVEL 2

The Level 2 platen cores are .018" (0,46 mm) shorter than Level 1 cores when measured pin-to-pin. The new pinfeed platens have a hex shaft and the old pinfeed platens have a threaded shaft.

Should the core on an old level pinfeed platen need to be replaced, order a new level core, (49-117) PLUS ONE EACH of the platen shims (49-26). This gives the proper fit pin-to-pin.

5 SERVICE INFORMATION (1/71)

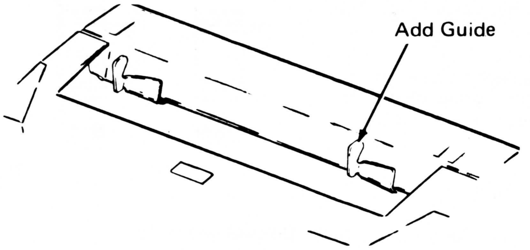
CONTINUOUS FORMS

On pinfeed platen machines where continous forms are used, it is recommended that the forms be supplied from a table approximately the same height as the typewriter stand. The additional pull needed to feed the forms from the floor may make indexing difficult to adjust.

6 SERVICE INFORMATION (10/68)

CONTINUOUS FORM - LATERAL CONTROL TIP

A second paper guide can be installed for continuous forms application to help control the lateral position of the forms.



7 SERVICE INFORMATION (CEM 1) (1/74)

PRINT SHIELD - REMOVABLE - "SELECTRIC" I WITH FILM RIBBON

A print shield may be used to remove side printing or interference printing on the original (for "Selectric" I Typewriters with film ribbon).

Use B/M (22-225) after ensuring that maladjustments are not causing the side printing condition.

Interference printing may reappear when the shield becomes worn. The shield will last approximately 30 ribbons. (The shield should be inspected on any service call and replaced if necessary to minimize the number of times an operator has to replace the cardholder and shield assembly.)

1. Adjust for normal .010"-.015" (0,25-0,38 mm) cardholder-to-platen clearance.
2. Adjust cardholder left or right and up or down for proper registration. A common cardholder for both the 10 and 12 pitch machines is used. This means that there will be 5 spaces between the registration marks for a 10 pitch machine and 6 spaces for a 12 pitch machine.
3. On old-style film ribbon mechanisms, adjust the load lever link so the shield is against the platen when the ribbon is being installed.
4. Check for possible interference with the ribbon lift mechanism. When the cardholder is adjusted for proper registration, the shield will be in the correct position.
5. Type an uppercase "T," backspace and type an underscore. The "T" should be in the center and the underscore approximately .020" (0,51 mm) from the bottom of the hole (Figure 1).
6. The shield actuating lever must be toward the front during normal typing operation and the shield must rest against the element. Fold the shield at the bottom if necessary to get this condition.

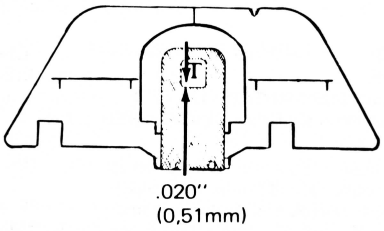


Figure 1

Instruct the operator to push the gray positioning lever to the rear before installing an element. This will prevent the shield from getting under the element. During typing the lever must be toward the keyboard.

When the load lever of the film ribbon mechanism is activated, the shield will automatically be positioned to the rear. The ribbon must be installed in front of the shield.

Show the operator how to remove and install the cardholder. (Have the operator try it.)

Leave the 4 additional cardholders with the operator.

8 SERVICE INFORMATION (CEM 297) (12/77)

PAPER BAIL ARM AND PLATEN KNOB SCREW - LOOSE

Loose paper bail arm screw (22-02) and platen knob screws (12-02) may be secured by applying sealant (Type E - T21 - 30) on screw threads before tightening. This will allow removal of screws if necessary.

1 SERVICE INFORMATION (CEM 353) (2/79)

FEED ROLLS - MARKING ORIGINAL AND CARBON COPIES

If experiencing feed roll marks on original and/or carbon copies, replace with light gray plastic insert feed rolls (22-286, 287). The feed rolls are resistant to chemical reactions with carbon and copied paper. Also the rubber is softer to reduce carbon marking. If still experiencing carbon marks on copies after replacing feed rolls, the tie rod springs (22-87) may be used on the A-frame machines.

Adjust springs for 16-20 oz. feed roll tension.

The part numbers will remain the same and are located in the current PN/PL. All old style parts have been scrapped.

2 SERVICE INFORMATION (CEM 359) (2/79)

PAPER BAIL ARMS - UNIVERSAL

A universal paper bail arm (22-1,19; 26-74,100) for "Selectric" II and correcting "Selectric" II Typewriters is now available. This change does not affect the 7XX machines.

On some early level machines it may be necessary to use washer (26-210) (Figure 1) on the inside of the left-hand paper bail to remove interference with the platen latch. The washer is available in parts packet No. 8.

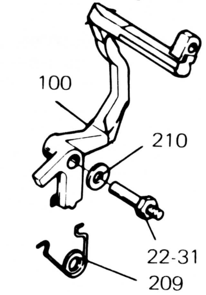


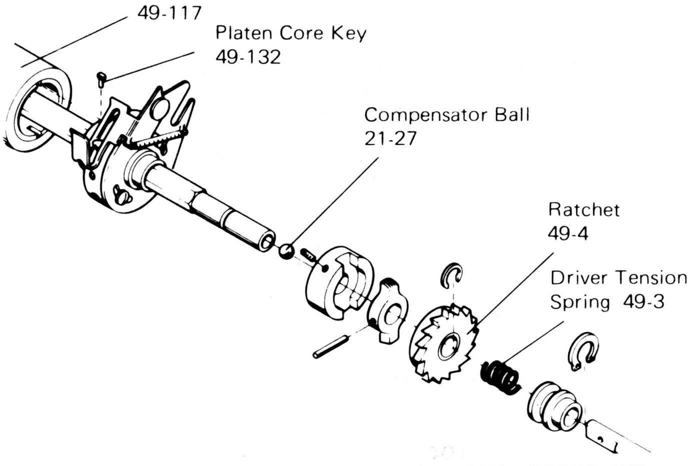
Figure 1

3 RELIABILITY (CEM 309) (1/76)

PINFEED PLATEN ERRATIC LINESPACING

Three areas in addition to adjusting the indexing mechanism should be checked when experiencing erratic linespacing.

1. Insufficient driver spring tension (49-3). Check the tension with a spring scale against the left platen knob. It should be 1.5 to 2.5 lbs. just before the driver seats in the ratchet. The tension can be increased by installing a compensator ball (21-27) as illustrated.
2. Some 27 tooth ratchets (49-4), previous to this CEM, may have misaligned serrations. It is recommended the ratchet be changed if erratic linespacing is encountered.
3. Check the platen core key (49-132) for wear and replace the key and core if worn. Metal pinwheels have a replaceable key (P/N 1187957). Black plastic pinwheels have a molded key and replacement of the pinwheel is necessary.



Approximate S/N: 7X1 - 0613000—0625000, 8X3 - 152800—1565000, 8X5 - 2833000—2902000.

**Recovery Code
Expired 10-76**

4 RELIABILITY (CEM 366) (7/78)

COURT REPORTING PLATEN

Court reporting platens are identified with an "0" stamped in the left end plug. Some court reporting platens (12-16) may have reached the field ground to the same diameter as a standard platen and still have the "0" identification.

If experiencing incorrect linespacing, when all adjustments appear correct and a "0" is stamped in the end plug of the platen, replace the platen.

Approximate S/N: 8X3 above 26—1904200.

**Recovery Code
Expired 7-12-79**

5 SERVICE INFORMATION (CEM 390) (5/79)

PIN FEED PLATEN - "D" SHAPED PINS

The pins (49-101) are now "D" shaped (Figure 1) and the diameter has been increased from .140" to .162" (3,56 to 4,11 mm). This will make the pin size agree with paper industry standards and maintain compatability with previous level platen core lengths.

If experiencing poor print quality (i.e., tails or smearing) and/or inconsistent alignment, replace both pin wheel assemblies (49-130).

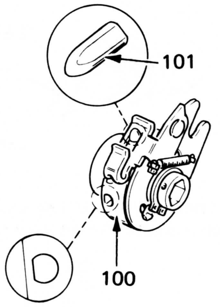


Figure 1

NOTE: High lift pin wheel assemblies and previous level standard pin wheels will no longer be available for current level pin feed machines (hex shaft). If replacement of old level pin wheels or parts (high lift or standard) is necessary on hex shaft machines, both sides should be replaced with the "D" shaped pin wheels.

Pin wheels with "D" shaped pins are not compatible with old level pin feed machines (threaded shaft). If "D" shaped pins are required on threaded shaft machines, install pin feed platen B/M (49-131). Pin wheel assemblies with smaller diameter metal pins (49-09,11) will be available for threaded shaft machines until current stock is depleted.

6 SERVICE INFORMATION (12/79)

PLATEN SUBSTITUTION ON 8X3 MACHINES

Print and index problems can be caused by a 7X3 platen (12-16) being installed in an 8X3 machine.

The 7X3 right-hand platen shaft is too short to support the overall length of an 8X3 bushing, causing movement of the platen inside the bushing.

Do **not** substitute 7X3 platens on 8X3 machines.

1 SERVICE INFORMATION (CEM 377) (11/78)

PLATEN KNOBS

Level 2 platen knobs (12-55) are now being manufactured with the setscrews in line to reduce possibility of knob loosening.

Levels 1 and 2 platen knobs (12-55) can be used on any left-hand platen shaft.

Level 1 platen knobs can be used on all right-hand platen shafts providing one screw is contacting the flat surface of Levels 2 and 3 shafts (Figure 1).

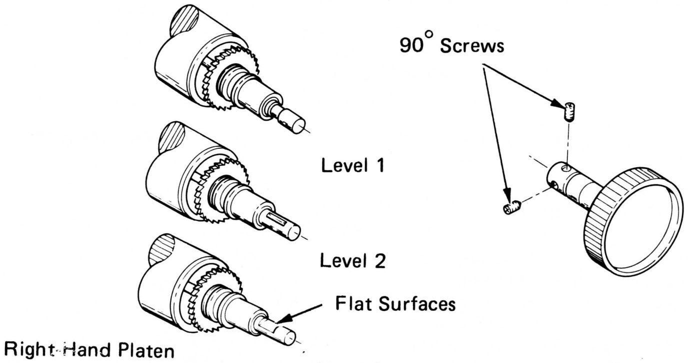


Figure 1

Level 2 platen knobs (12-55), in-line screws, can only be used on Levels 2 and 3 right-hand platen shafts (Figure 2).

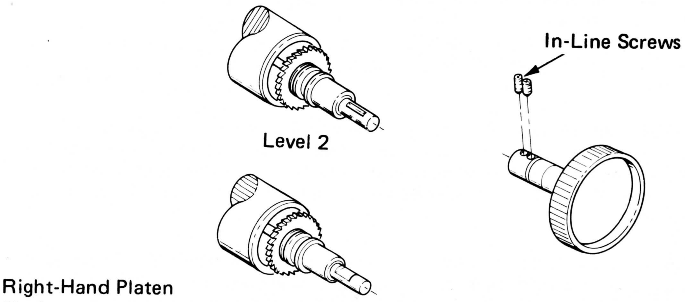


Figure 2

A flat can be filed on the Level 1 platen shaft to allow use of a Level 2 knob, or to reduce the possibility of a Level 1 knob loosening.

2 SERVICE INFORMATION (CEM 409) (1/80)

PAPER BAIL ARM SPRING

Several different levels of paper bail arm springs (22-33, 26-209) have been used in production of "Selectric" Typewriters. Each level provides a slightly different amount of spring tension. The current production paper bail arm spring obsoletes all previous levels and may be used on any level "Selectric" Typewriter. Machines above approximate S/N: - 7X1 - 0808048, 8X3 - 5044864, 8X5 - 6133326, Canada 8X5 - 4844000, and 670X - All, have this spring installed.

The paper bail arm springs in Parts Packet No. 5 are not current level. Scrap all paper bail arm springs in Parts Packet No. 5. Order replacement quantities 22-33 or 26-209.

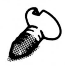
Paper bail arm springs have been deleted from Parts Packet No. 5.

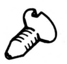
When paper bail spring replacement is required on machines below the serial number range listed above, both springs should be replaced. The universal paper bail Bill of Material (22-219 and 26-104) includes the correct level springs.

3 SERVICE INFORMATION (CEM 424) (5/80)

PAPER BAIL ARM SCREWS - 7XX — 8XX REDESIGNED

Self-locking material has been added to the threads of the paper bail arm screws (22-02) (Figure 1). This will prevent loosening of the screws.





If experiencing loose paper bail arm screws, replace with the new level screw.

4 SERVICE INFORMATION (CEM 453) (4/81)

PLATEN DETENT - INTERFERENCE

A limited number of early production "Selectric" IIIs were manufactured with a right front paper feed eccentric adjusting screw (22-250) which is longer than the present design. The long screw may interfere with the platen detent arm (20-21), causing index failures. If this condition is found, replace with present production screw (22-250).

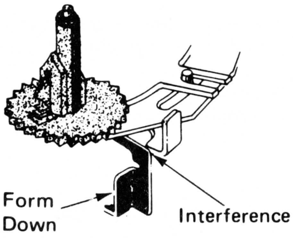
Below approx. S/N: Type 6701 - 0000095; Type 6702 - 1003567; Type 6703 - 2004383; Type 6704 - 3000761; Type 6705 - 4038927.

RIBBON – FABRIC

1 SERVICE INFORMATION (10/68)

REVERSE FAILURE LIFT LEVER

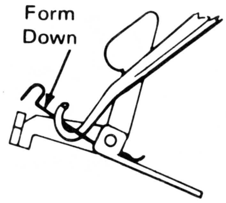
Intermittent ribbon reverse problems can be caused by interference between ribbon lift lever and ratchet check lever. This usually happens in the center and high lift positions. Form the ribbon position lever down to remove this condition.



2 SERVICE INFORMATION (10/68)

RIBBON REVERSE INTERPOSER SPRING TENSION

To minimize reverse failures on early level machines, the tension on the ribbon trigger springs must be increased. A quick, reliable way of doing this is to raise the spring with a spring hook as shown. The end can then be formed down.



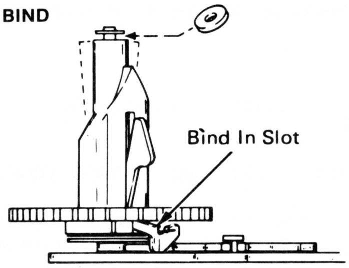
Also, intermittent ribbon reverse failure can sometimes be caused by the reverse interposer spring dragging on the rivet on which the reverse interposer slides. This may be fixed by removing the cut-off burr from the rivet.

Check the molded tenons on the ribbon cartridge to see that no interference exists between the molded tenons and the reverse lever which may cause reversing failures.

3 SERVICE INFORMATION (10/68)

REVERSE FAILURES - TRIGGER BIND

Some reverse failures are due to ribbon assemblies which are not long enough. This allows the reverse trigger to bind in the slot of the ratchet. To fix the problem, install a washer (PN 1175195) as shown.



4 SERVICE INFORMATION (10/68)

REVERSE FAILURE - BRAKE TENSION

Uneven (light/dark) printing of the characters on a fabric ribbon near either end of the supply spools may indicate incorrect ratchet brake spring tension. These springs (13-76) should be formed to drag on the ratchets enough to produce a tightly wound ribbon. If either spool winds loosely, the reverse trigger will be allowed to operate at different points along the ribbon toward the end of the ribbon, thus producing the light and dark pattern.

5 SERVICE INFORMATION (1/74)

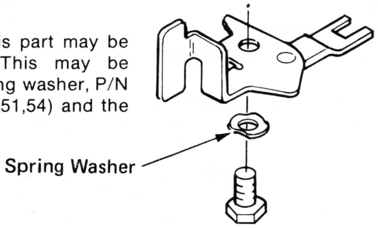
RIBBON TRACKING

Power-on ribbon tracking can be easily observed on any fabric ribbon machine by placing a piece of correcting-type paper at the front side of the ribbon with the correcting side toward the ribbon. By typing a series of characters at each lift position, a visible, non-damaging indication of tracking results.

6 SERVICE INFORMATION (10/68)

RIBBON LOAD LEVER - EXCESSIVE VERTICAL MOTION

Excessive vertical motion of this part may be unwanted by the operator. This may be corrected by installation of spring washer, P/N 1072477, between the stud (13-51,54) and the lever (13-49, 55, 78).



7 SERVICE INFORMATION (10/68)

RATCHET DETENT LEVER - REDESIGNED

Ribbon reverse or feed failures may force the lugs of the ratchet detent lever under the ratchet. This will occur only after a reverse or feed failure. To prevent this double failure, the ratchet detent lever has been extended .020" (0,51 mm) higher and the detent lever mounting rivet has been modified to reduce end play.

A field fix for this condition is as follows: Form the detent lugs up to ensure that the top of the lug remains at the top of the ratchet when all play is removed in the downward direction. After making this change, recheck adjustment of the ratchet detent lever lugs.

8 SERVICE INFORMATION (7/79)

FABRIC RIBBON REVERSE FAILURE

Fabric ribbon machines sitting unused for a length of time may exhibit "ribbon reverse" failure. The nylon ribbon will have a dimple in the core caused by the spring loaded reverse finger (13-11). This dimple is deep enough to cause the sensing finger to reverse.

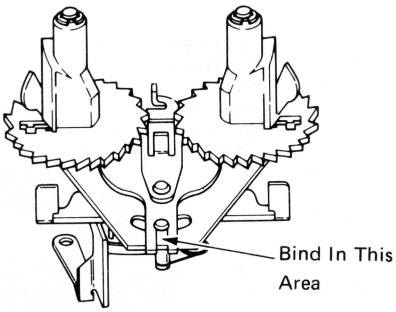
Change the ribbon.

9 RELIABILITY (CEM 435) (9/80)

FABRIC RIBBON REVERSE FAILURES

Some replacement ribbon plates may have a bind in the area of the stud and the fork in the plate (Figure 1).

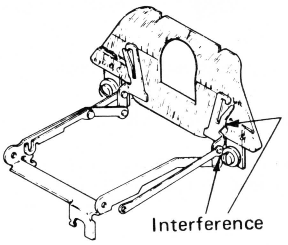
If the ribbon fails to reverse, check for binds in the area shown in Figure 1. Also check new assemblies before installing. If a bind is found on a new assembly return as a new defective part.



10 SERVICE INFORMATION (10/68)

FABRIC RIBBON LIFT GUIDE – INTERFERENCE

The free flight of the element may be limited due to interference between the lift guide and the card holder. This will usually affect low velocity characters on a stencil application.



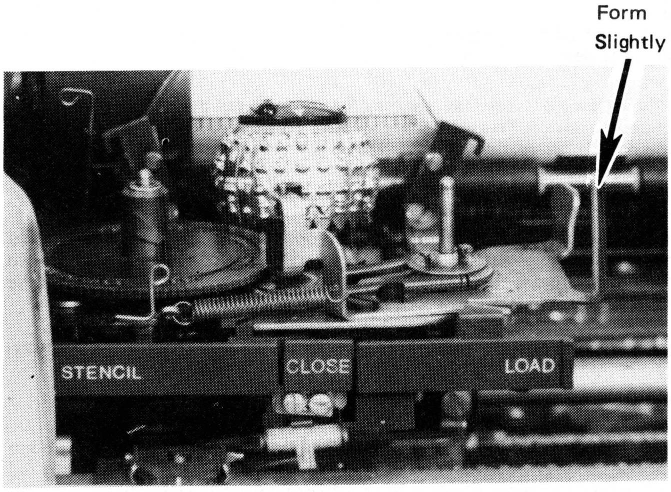
RIBBON – FILM

1 SERVICE INFORMATION (10/68)

FILM RIBBON - FOLDING & TRACKING PROBLEMS

When experiencing tracking problems with film ribbon "Selectrics" due to folding of the ribbon, check the following:

1. **Ribbon Plate Adjustment Tip:** When all adjustments are correct and the film ribbon fails to track properly, folds at the right guide, or contacts the take-up spool, the right front guide may need adjusting. Forming to the right will lower the ribbon; left, will raise it. Do not form so far to the left that the lug contacts the spool.

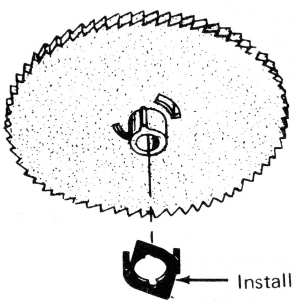


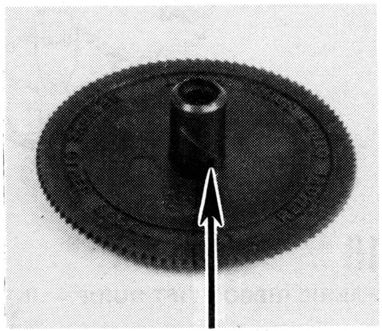
2. **Lift Guide:** Film ribbon folding can be caused by a bending action of the ribbon lift guide assembly as a result of interference between the card holder mounting screw and the lift guide.
3. Ribbon tracking and folding can be affected by a dirty and sticking shock spring sleeve. Keep the sleeve and wire clean.
4. **Shock Spring:** Ribbon folding may be fixed by reducing the tension of the shock load extension spring. **Caution:** The tension of the spring must be enough to positively detent the shock load spring into the supply spool ratchet teeth or uneven feed will result. Also, be sure the shock spring angle is correct.

2 SERVICE INFORMATION (10/68)

RIBBON FEED FAILURE

The locking rib on the film ribbon supply spool may wear on machines used on automatic operation, causing ribbon feed failure. A clip (14-257) may be installed to correct this condition.





Wear Occurs Here

3 SERVICE INFORMATION (10/68)

FILM RIBBON CHANGES

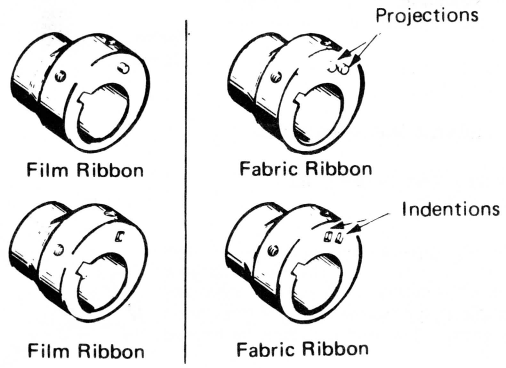
Fabric to film ribbon changes are recommended only for machines equipped with stick-shift and dual impression.

4 SERVICE INFORMATION (1/71)

RIBBON FEED AND DETENT CAMS - IDENTIFICATION

The fabric ribbon feed and detent cam can be identified by either two square indentions or two rounded projections.

The film ribbon feed and detent cam is identified by one square indention or one round projection.



5 SERVICE INFORMATION (10/68)

COMPATIBILITY OF FILM AND FABRIC RIBBON CAM FOLLOWERS

Film ribbon machines now use the same ribbon lift cam follower (13-45) as fabric ribbon machines. When installing B/M (14-175), Fabric to Film Ribbon Change, it will be unnecessary to change the follower as instructed in the installation instructions.

6 SERVICE INFORMATION (10/68)

SPRING, LIFT LINK (FABRIC TO FILM RIBBON CHANGE)

Disconnect the lift link when changing a fabric ribbon to a film ribbon machine. Lift adjustments cannot be made if this spring is connected. Also, an overlapping pattern will result if this spring is connected.

7 SERVICE INFORMATION 10/68

SHOCK SPRING ADJUSTMENT TIP

The small formed part of the shock spring that extends to the left from under the mounting screw head can be used for holding the spring in the adjusted position while tightening the screw.

The small loop on the end of the shock spring has been turned so the loop faces to the left. This was done to prevent the ribbon from slipping off when installing the ribbon.

RIBBON SELECTIVE

1 SERVICE INFORMATION (CEM 143) (2/72)

PRINT QUALITY - TECH III

Some print quality problems have been caused by oil on the ribbon. Remember this possibility. If necessary, clean excessive oil from the carrier and the ribbon mechanism. The assembly line is now using less oil in these areas.

2 SERVICE INFORMATION (CEM 125) (10/71)

RIBBON LIFT FAILURES - SELECTIVE RIBBON

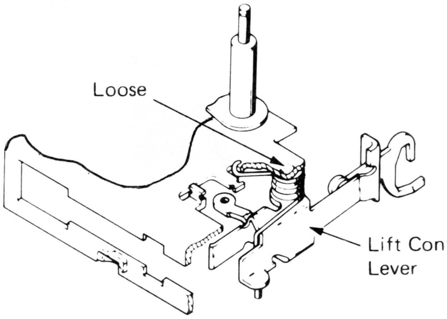
Intermittent ribbon lift failures can be caused by improper print shaft timing.

If experiencing this problem, ensure the print shaft is timed within specification.

3 SERVICE INFORMATION (CEM 225) (10/73)

LIFT CONTROL LEVER MOUNTING STUD- LOOSE

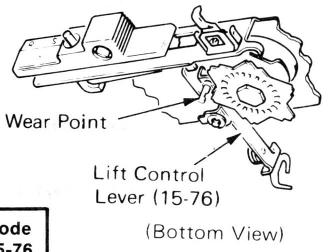
If experiencing intermittent ribbon lift failures with the selective ribbon system, check the mounting post of the lift control lever (15-76). If loose, replace ribbon plate assembly (15-151) or (26-106).



4 RELIABILITY (CEM 294) (7/75)

LIFT CONTROL LEVER STUD - WEAR

If experiencing intermittent ribbon lift failures with the selective ribbon system, check the lift control lever stud (15-76) for wear. (Stud can be easily observed with machine in stencil position.) Replace lift control lever, if necessary.



Recovery Code
Expired 7-15-76

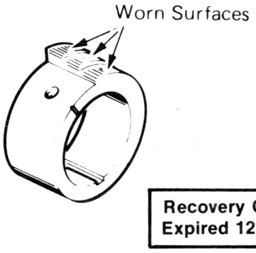
5 RELIABILITY (CEM 275) (12/74)

RIBBON LIFT AND TRACKING FAILURES

Some "Selectric" II Typewriters may have reached the field with a soft ribbon lift cam (15-17), (26-56).

When experiencing ribbon lift or tracking failures, check the lobes of the cam for excessive wear. Replace the cam if necessary.

The failure is more visible when using film or correctable film ribbons as the characters overlap between lift positions, leaving voids on the paper.



Recovery Code
Expired 12-1-75

6 RELIABILITY (CEM 214) (8/73)

GUARD - SELECTIVE RIBBON

Tech III and film ribbons will break when not properly installed around shock wire.

To prevent operator from incorrectly installing Tech III or film ribbon on selective ribbon machines, install guard as shown in Figure 1. Hold ribbon plate with finger when pressing down guard. Hook shock wire spring to lug on guard.

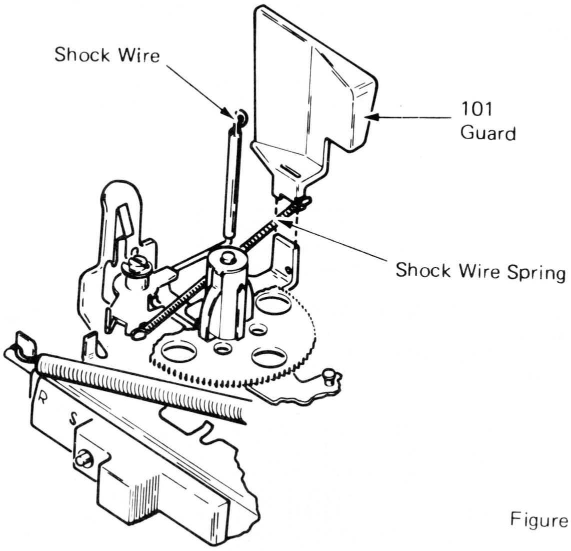


Figure 1

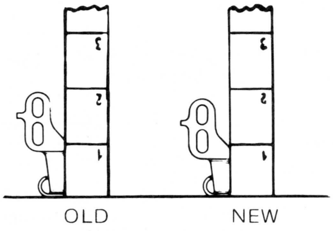
Recovery Code
Expired 8-21-74

7 SERVICE INFORMATION (CEM 299) (12/75)

SELECTIVE RIBBON SPREAD PLATE - REDESIGN

The slots in the spread plate have been made longer to make the adjustments easier.

Replace spread plate (15-22). This plate is stronger and has a shorter lever extension.

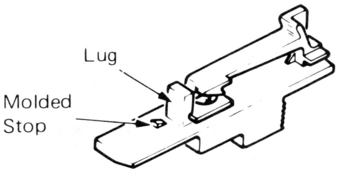


It is necessary to replace adjusting plate (15-24) on machines below 8X3 - 1070370 and 8X5 - 2085674.

8 SERVICE INFORMATION (CEM 254) (2/78)

STENCIL LEVER - REDESIGNED - SELECTIVE RIBBON

Stencil lever (15-80) has been redesigned with a molded stop to prevent the lever from popping out of the ribbon plate when pushed too far left.



To install redesigned stencil lever:

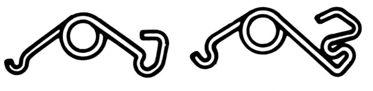
1. Remove C-clip (15-21) from lift cam follower (15-24).
2. Move stencil lever (15-80) to left and disengage from ribbon plate (15-86).
3. Remove spring (15-79) from old stencil lever and install on new stencil lever. Do not overstretch spring.
4. Insert screwdriver through opening in ribbon plate (15-86) and move lift control lever (15-76) to left to reinstall stencil lever.
5. Ensure lift control lever is engaged with lift cam follower roller (15-20) and reinstall clip (15-21).

Plant installed above approx. S/N: 8X3 - 1423000, 8X5 - 2631000.

1 RELIABILITY (CEM 269) (9/74)

LOAD LEVER SPRING - REDESIGNED

Under certain conditions, it is possible for the load lever spring to pop off. New level will eliminate this condition.



Replace with new level spring (26-18).

This change cannot be installed on machines manufactured prior to 8X3 - 1028900, 8X5 - 203400 unless the old level ribbon plate asm. is replaced with the new level (26-106).

Plant installed above approx. S/N: 8X3-1345000, 8X5-249400.

Recovery Code Expired 9-15-75

2 SERVICE INFORMATION (CEM 360) (2/78)

WOBBLER SPRING - REMOVED

The wobbler spring (15-26) has been removed from production machines. The ribbon lift arm spring (15-78) supplies restoring motion to the wobbler. It is not necessary to install the spring on new machines or to replace the spring when working with this mechanism on machines presently in the field (Figure 1).

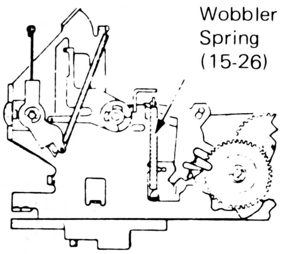


Figure 1

3 SERVICE INFORMATION (CEM 304) (11/75)

PRINT QUALITY - OVERINKING AND/OR FILL-IN

Use the following procedure when experiencing overinking and /or fill-in using correctable film ribbon.

This condition can be reduced by making the following checks and adjustments:

a. Check the application. For best results, use a 16-20 lb. (60-75 g/sq. m) smooth surface original with less than three copies.
b. Adjustments:
   1. Platen front-to-rear.
   2. Platen height - Even top and bottom.
   3. All rotate and tilt homing adjustments.
   4. Rocker shaft end play.
   5. Rotate and tilt detents - Minimum side play, no binds.
   6. Cardholder - Adjust to the high side - .030" (0,76 mm) of the specification at the writing line.
   7. LH ribbon lift guide.
   8. Escapement timing - escapes just after print.
c. If the application is not recommended for use with the correctable film ribbon, and the above adjustments do not produce desired results, suggest Tech III/cover-up.

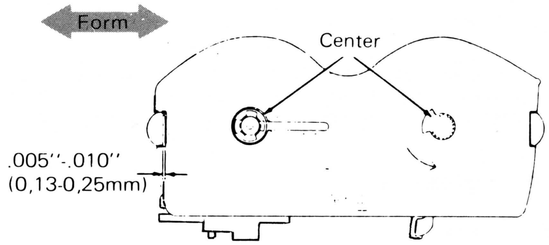
4 SERVICE INFORMATION (CEM 375) (11/78)

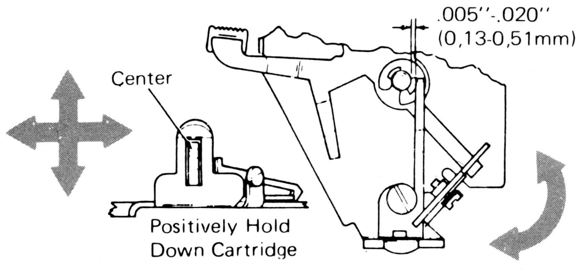
FLAKING AND/OR EXCESSIVE RIBBON DUST

Checks and adjustments to minimize flaking and excessive ribbon dust when using correctable film/carbon film ribbon.

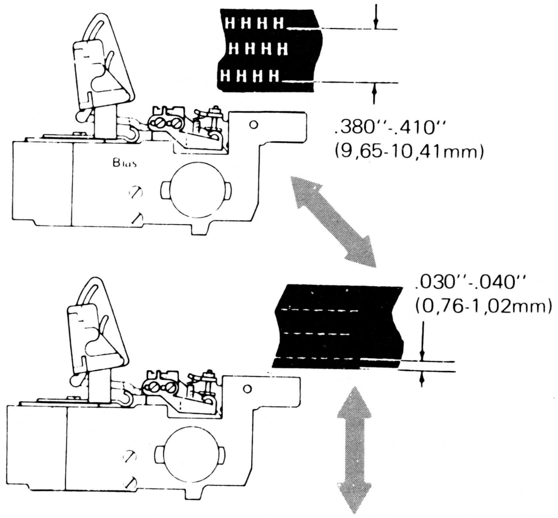
Make the following ribbon mechanism adjustments to minimize flaking and buildup of ribbon dust. Make sure all platen adjustments are correct.

1. Clean Carrier And Ribbon Area - All carbon buildup must be removed from lift guides. Lubricate lift guides with light film of No. 23 grease on sliding surfaces.
   Note: An excessive carbon dust buildup in the carrier area can identify a problem. Inspect the parts and adjustments around the carbon build-up. This must be cleaned from the machine to avoid transferring to the paper.
2. Cartridge Guides (15-86) And Cartridge Retaining Springs (15-59) - Check for proper centering and positive latching of cartridge.

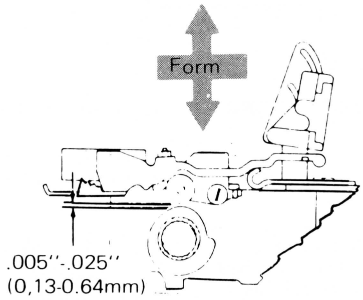




3. Spread Adjusting Plate (15-22) And Lift Height (15-30) - Adjust ribbon spread to low side of spec. .380" (9,65 mm) and lift to high side of spec. .040" (1,02 mm). This provides minimum lift motion required to ensure each character strikes an unused section of the ribbon.

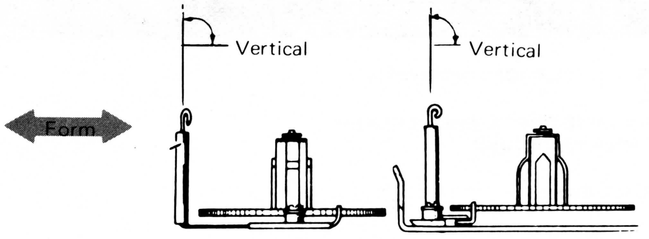


4. Lift Arm Lower Stop (15-2) - Adjust to **high** side of spec. .025" (0,64 mm). **Note:** Be sure lowest character does not strike ribbon when reached in stencil position.



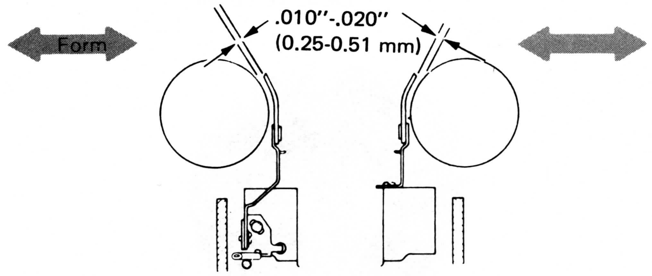
5. Shock Wire (15-83) - The shock wire should be vertical. The ribbon should track in the center of the guides during typing. **Form the shock wire slightly to correct any tendency to track away from center.**

(Continued On Next Page)



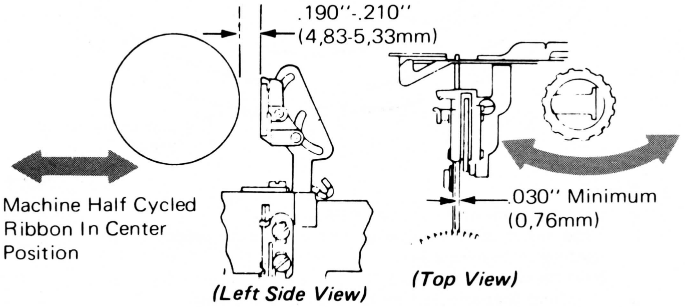
(Left Side View) *(Front View)*

6. Cardholder (26-41) - Adjust clearance to **low** side of spec. .020" (0,51 mm). Do NOT allow the cardholder to touch the paper when using the customer's thickest application. Instruct the operator to use the copy control lever if necessary on 7XX and 8XX.



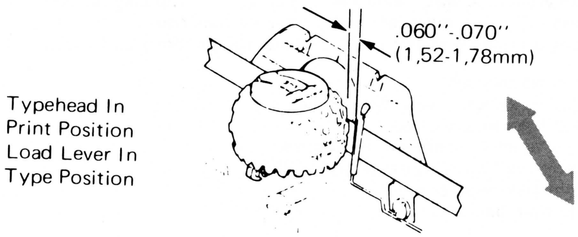
(Left Side View) *(Right Side View)*

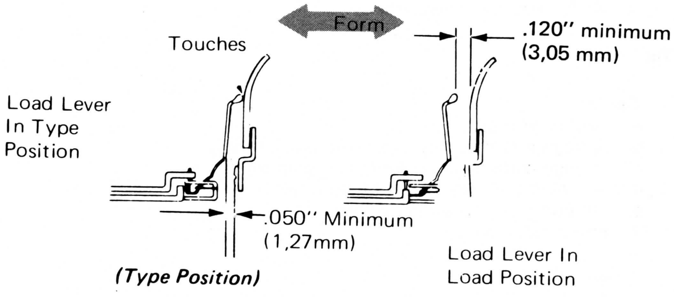
7. Left-Hand Ribbon Lift Guide (26-72) - Adjust so inked side of ribbon does not come in contact with guide or other machine parts. **Note:** Ribbon guides must be parallel. This is a refinement of the ribbon lift guide adjustment.



(Left Side View) *(Top View)*

8. Separator Wire Left-To-Right (26-9) - Adjust separator wire to high side of spec. .070" (1,78 mm). Check with typing element held against platen to ensure **least possible** contact of ribbon with separator wire during typing.





(Type Position)

1 SERVICE INFORMATION (CEM 410) (1/80)

RIBBON LIFT ARM - STRIPPED SCREW

If the mounting screw hole for the ribbon lift arm (15-25) is stripped, an additional nut (15-05) can be added to the inside of the carrier to retain the screw (15-06).

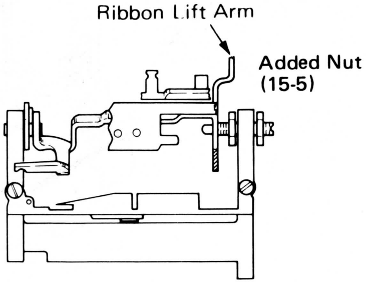
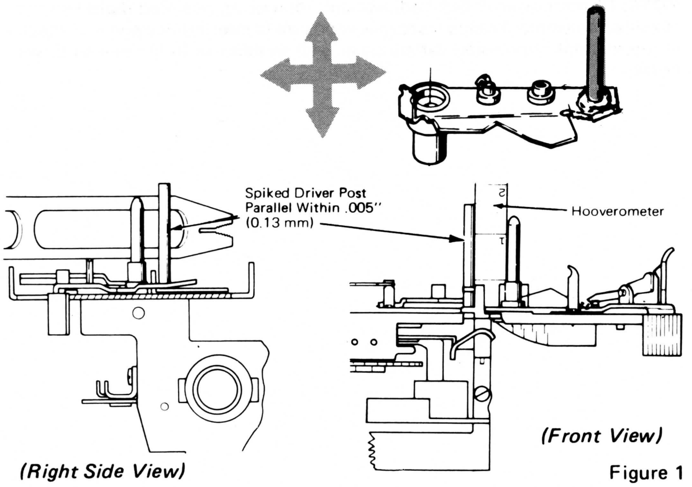


Figure 1

2 SERVICE INFORMATION (CEM 226) (10/73) (CEM 402) (10/79)

SELECTIVE RIBBON MECHANISM - FEED FAILURES/RIBBON WRAPPING AROUND SPIKED DRIVER/FOLDING

When experiencing ribbon feed failures and/or ribbon wrapping around the spiked driver after approximately 1/2 of the ribbon is used, the cause may be the spiked driver is not parallel with the take-up post (Figure 1). [This can often be detected visually. Observe the take-up spool for evidence of "coning" (ribbon tends to wind toward the top of the take-up spool).] Also, check the spike mark pattern on the used ribbon. The upper and lower spike marks should be of equal size and penetration on a properly adjusted mechanism.



(Right Side View) *(Front View)*

Figure 1

When making the spiked driver post adjustment, it is important that both left-right and front-rear parallel conditions are correct.

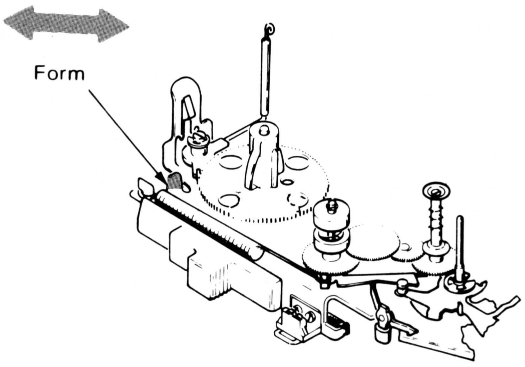
Note: It is recommended that this adjustment be checked when installing a new ribbon plate. Operators should be instructed to wind the ribbon in the proper direction until the leader is completely inside the right end of the ribbon cartridge. When reinstalling a ribbon, it should only be wound until the slack is taken out. If more movement is necessary, it should be done by typing.

Ribbon folding or improper centering in the lift guides can also contribute to the above failures. A folding condition occurs as the ribbon enters the take-up side of the cartridge when a ribbon is installed or reinstalled. Once the ribbon has started to fold, it will not take up properly.

To minimize this condition:

1. The cartridge should be inspected before installing to ensure that the ribbon leader is centered on the ribbon and the supply core. If not, it will cause binds in the cartridge.
2. Ensure that the shock arm wire (15-83) does not contact the supply spool teeth when the ribbon is in the load position.
3. Adjust the left cartridge retainer clip as far left as possible (Figure 1).
4. Form the front cartridge support lug for a clearance of .010"-.015" (0,25-0,38 mm) clearance between the cartridge and lug (Figure 1).

(Continued On Next Page)



5. Ensure that the take-up core interlock prevents the cartridge from being turned in the wrong direction when in the load position.

1 SERVICE INFORMATION (11/80)

RIBBON FEED FAILURES - SPIKED DRIVER GEAR WEAR

Ribbon feed failures due to worn spiked driver gear (or ribbon feed gear) can result from interference between the spiked driver (15-57) and the tilt pulley spring anchor bracket (02-327). Check for adequate clearance with the impression control at stick 5 and the spiked driver positioned at its nearest point to the bracket. Reposition or form the bracket as necessary to provide clearance.

NOTE: Check powered flight adjustment. Increasing powered flight beyond specified adjustment range increases exposure to interference and may result in intermittent impression variations as well as damage to the spiked driver gears.

SELECTION

2 SERVICE INFORMATION

MACHINE CHECK WHEN BROKEN TAPES ARE FOUND

Rotate Tape:

1. Rotate Pulley:
   a. Incorrect radius near the slot for the rotate tape "T" (Figure 1). Tape usually breaks within 1/4" (6,35 mm) of the "T". Replace pulley.
   b. Foreign material, chips or burrs on pulley (Figure 2). Tape usually breaks within 5"-6" (127,0-152,4 mm) of the "T". Clean pulley thoroughly with IBM cleaning fluid or replace.
   c. Rotate pulley key (02-422) defective or loose.

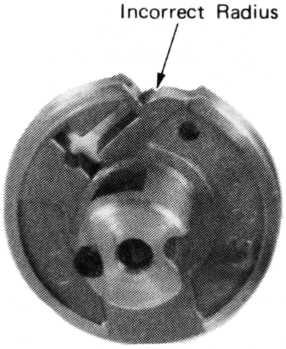


Figure 1

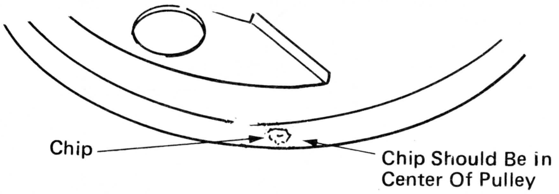


Figure 2

2. Carrier:
   a. Binding, sticking or broken rotate spring.
   b. Tape guide worn, loose or missing, or adjusted so tape engages leading or trailing edge.
   c. Skirt clearance insufficient.
   d. Any bind that affects free rotation of the element.
   e. Print shaft timing.

3. Rotate Tape Path:
   a. Rotate arm/shift arm not parallel to carrier.
   b. Defective rotate arm/shift arm pulley.
   c. Interference between rotate and tilt arms/pulleys.
   d. Interference between rotate tape and CR cord.
   e. Interference between shift arm and cord tension pulley bracket.
   f. Burrs or foreign material on any area the tape travels.
   g. Worn shift cam - shift arm not moving out smoothly and straight.

4. Selection Mechanism:
   a. Popping/defective selection latches.
   b. Latch links maladjusted.
   c. Negative latch clearance insufficient.
   d. Positive bail worn, loose or not parallel.
   e. Differential bracket loose.
   f. Gear train backlash.

5. Other:
   a. Shift interlock adjustments.

Tilt Tape:

1. Carrier:
   a. Skirt clearance.
   b. Foreign material, chips, or burrs on tilt pulley.
   c. Foreign material in sector gears (gear tilt).
   d. Any bind that affects free tilting of tilt ring.
   e. Tilt pulley spring off or broken.
   f. Print shaft timing.

2. Other:
   a. Any tape path or selection concern above which could affect tilt tape path and movement.

1 RELIABILITY (CEM 117) (9/71)

ROTATE PULLEY - TAPE ANCHOR LIFTING OUT OF PULLEY

Malselection is possible if the "T" end of the tape anchor rises and slips to the rear of the "T" slot in the pulley. It is also possible that the tape anchor may come completely out of the pulley.

Replace the pulley.

Recovery Code
Expired 10-1-72

2 SERVICE INFORMATION (10/68)

TAPE INSTALLATION (PRE-GEARLESS TILT)

When installing the rotate tape on a gear tilt machine, difficulty may be experienced when feeding the "T" end of the tape between the rocker and the tilt pulley. To work around this problem, a small amount of metal may be filed off the "T" anchor to provide more clearance. The eyelet end of the tape may also be threaded through the carrier and the tape pulled through, stopping the need for working the "T" around the pulleys.

3 SERVICE INFORMATION (10/68)

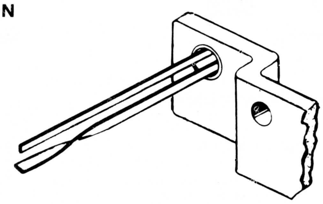
XX5 ROTATE TAPE CAN BE USED ON XX1, XX3

The XX5 rotate tape can be used on the Model XX1 and XX3 if necessary. When it is used, it requires readjusting character selection.

4 SERVICE INFORMATION (10/68)

ROTATE TAPE INSTALLATION

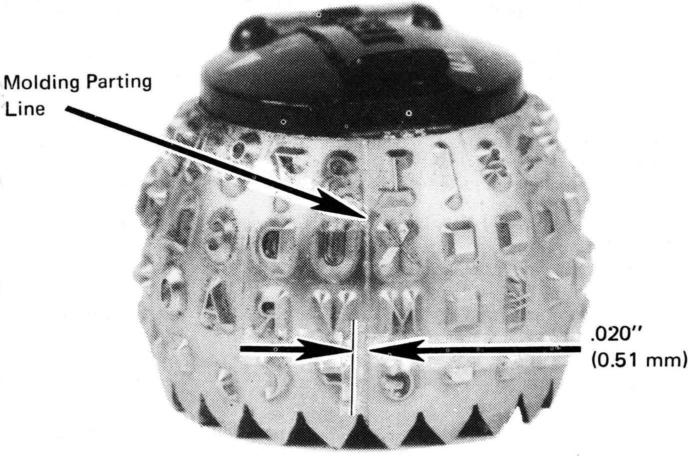
Rotate tapes should be installed so that when the rocker is in print position, the twist in the tape is at a maximum. The top of the tape should be to the front when coming out of the rocker shaft.



5 SERVICE INFORMATION (10/68)

TYPEHEAD HOMING - 7XX, 8XX

When adjusting fine homing of the 88 character type element, the mold parting line on the element can be used as a gauge of .020" (0,51 mm). Although it is recognized that the parting line does not come into the correct tooth in all cases (i.e., the "M"), the line can be used as a reference to gauge .020" (0,51 mm) motion when detenting in most teeth.



6 SERVICE INFORMATION (10/68)

PRINT SHAFT TIMING ADJUSTMENTS

Detent entry and withdrawal (fine timing) should be checked by hand cycling with the hand cycle wheel. Because of gear backlash, etc., hand-cycling with the print shaft will result in an incorrect reading.

7 SERVICE INFORMATION (10/68)

TIMING PROBLEMS

When experiencing repeated malselection, broken tapes, escapement and uneven impression, check the cycle shaft, filter shaft and upper idler gears for a tight bond between metal hubs and their nylon bodies. Also, slippage between parts can throw machines out of time very slightly until a failure occurs.

Mark the hub and gear, then run the machine and recheck the marks for alignment.

8 SERVICE INFORMATION (10/68)

TILT DETENT ENTRY ADJUSTMENT - SERVICE TIP

The tilt detent entry may be adjusted without cover removal by removing the platen and using a 5/16" spinner wrench (T06-2) to loosen the locking nut (23-01). Then the adjusting screw may be turned with a springhook or longnose pliers.

9 SERVICE INFORMATION (10/68)

TILT PULLEY SPRING - GEAR TILT - SERVICE TIP

When the tilt pulley spring is disconnected from the tilt pulley on gear tilt machines, it may be hooked onto the detent actuating lever (02-524). This will prevent the left end of the spring from coming unhooked.

10 SERVICE INFORMATION (10/68)

LH TILT PULLEY STUD WEAR

In those cases where tilt adjustments have changed, or where tilt tapes have broken, check the LH tilt pulley stud (23-27) for excessive wear on the barrel-shaped part. Replace if necessary.

11 SERVICE INFORMATION (1/74)

DIFFERENTIAL BRACKET ASSEMBLY - LOOSE

When differences in band width cannot be corrected through normal adjustment, look for a loose or broken differential asembly mounting stud. A loose nut can result in intermittent malselection and tape breakage.

12 SERVICE INFORMATION (10/68)

NEGATIVE BAIL STOP SCREW ADJUSTMENT

If the negative bail stop screw (23-216) is readjusted, be sure to check the overlap of the latch on the head of the stop screw. The head of the stop screw may be out-of-round and turning the screw may change the overlap. If necessary, readjust the negative 5 or 6 latch link for proper latch bite.

13 SERVICE INFORMATION (10/68)

POPPING SELECTOR LATCHES

Popping latches can be caused by:

1. Selector latch links too short.
2. Selector latch springs binding on latches.
3. Selector latches not vertical.
4. Excessive lost motion in the selector bails.
5. Selector latch links too long.
6. Angle too large in bail plate hook.

The above adjustments have caused popping latches in the past and must be checked for proper adjustment.

Before replacing a popping tilt or rotate latch assembly, try cleaning the pivot points with cleaning fluid and relubricating.

Also clean a replacement assembly before installing. Foreign material has been found on some of these assemblies.

(Continued On Next Page)

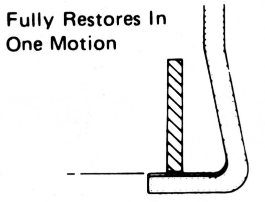
Selector latches manufactured with too large an angle in the formed area which hooks under the bail plate may cause intermittent latch popping, which could result in malselection, a broken tape, or compensator roller drop.

It is very hard to visually detect a bad latch by looking at the angle. A suggested way for locating the bad latch is as follows:

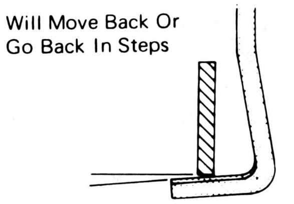
1. With the power off, select the - 5 rotate (-6 on 670X), "0" tilt character, and with the turning wheel, run the cycle through by hand until the cycle clutch slips. This will place all the latches against the bail plate ready to restore under the plate.

2. With the machine on its back, again select the - 5 rotate (-6 on 670X), "0" tilt character. Very slowly start the next cycle by hand. The selector latches may now be observed restoring under the bail before they begin the next cycle. The following should be observed as the latches restore.

   a. A good latch will fully restore in one motion.
   b. A bad latch will move slowly back under the bail. It may take two or more steps to fully restore, depending on how slowly the machine is cycled. This indicates that the working face of the latch is angled away from the bottom of the bail plate. If such a condition exists, the bad linkage assembly must be replaced.



Good Latch



Bad Latch

1 SERVICE INFORMATION (10/68)

CYCLE CLUTCH PULLEY REPLACEMENT

1. Remove cycle shaft (clean, lubricate and/or replace the clutch spring).
2. Remove the cycle clutch latch by loosening the top screw and removing the bottom screw. When replacing, use Hooverometer head set on the no. 3 scribe line.
3. Rotate type head counterclockwise to loosen rotate tape and rotate print shaft to detent head.
4. Remove the rotate link.
5. Remove the balance arm stud (23-205).
6. Remove the rotate bellcrank (if the bellcrank is not countersunk on the back side, replace).
7. Remove belt.
8. Remove pulley.

Replace in reverse order, checking the following:

1. Ensure operational shaft sleeve (25-2) is properly positioned - replace if necessary.
2. Cam shift end play.
3. Gear backlash.
4. Balance arm.
5. Filter shaft timing.
6. Escapement cam and spacebar cam timing.
7. Shift interlock cam.
8. Print shaft timing.
9. Homing.
10. Belt tension.

2 SERVICE INFORMATION (10/68)

CYCLE CLUTCH SPLIPPAGE

Slow keyboard operation can be caused by the cycle clutch spring slipping or the sleeve binding. This condition may be noticed during repeat underscoring. The following area should be checked if this occurs:

1. Excessive cycle shaft end play - End play should be .001"-.006" (0,03-0,15 mm).
2. Oil on spring - the proper lubrication for the spring is IBM No. 23 grease. Any oil on the spring will allow slippage; the spring must be removed and completely cleaned with IBM cleaning fluid. Care should be taken to remove all oil from the cycle shaft reservoir area and the cycle pulley hub also. The clutch spring should be relubricated thoroughly with IBM No. 23 grease.
3. Incorrect adjustment of cycle clutch spring.
   a. Opening the spring too soon will cause slippage.
   b. The cycle clutch spring should be adjusted left or right to maintain .004"-.012" (0,10-0,30 mm) clearance between the spring and pulley hub. Excessive clearance will not allow enough engagement of the hub, causing slippage. Too little clearance will cause the spring to bind against the pulley hub and overload the clutch release train, causing sluggish keyboard reaction as well as noisy idling.

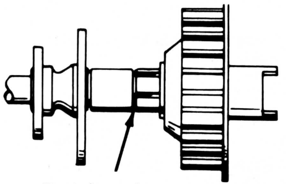
   c. The cycle clutch collar should be adjusted left or right to allow .010"-.015" (0,25-0,38 mm) end play of the clutch sleeve. Too little play of the sleeve can result in wrong readings of the cycle shaft end play (where the sleeve play substitutes for the shaft play) and a direct mechanical drive connection between cycle pulley and shaft. This latter condition will prevent complete closing of the cycle spring and result in slippage.

3 SERVICE INFORMATION (10/68)

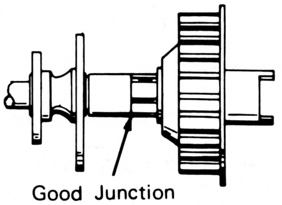
CYCLE CLUTCH SPRING WEAR

Machines which have slow keyboard action, uneven impression and/or other symptoms of cycle clutch spring wear may begin to appear as early as two to six months after installation. Before replacing the cycle clutch spring, be sure to check the condition of the edge of the cycle pulley arbor. A rounded edge (see drawing) will give the same results as excessive shaft end play - even end play may be within tolerance .001"-.006"(0,03-0,15 mm).

When a rounded cycle pulley arbor is found, it will be necessary to replace the pulley as well as the spring for a lasting correction. A rounded edge is easily found by reinserting the cycle shaft without the clutch spring into the machine and observing both arbors where they meet.



Bad Junction



Good Junction

4 SERVICE INFORMATION (CEM 311) (9/76)

CYCLE CLUTCH - EXTRA CYCLES

If experiencing extra cycles, check that the cycle clutch latch shock absorber (21-526) has not slipped from between the latch (21-524) and guide assembly (21-530). Clean excessive grease from shock absorber if necessary.

5 SERVICE INFORMATION (10/68)

CYCLE CLUTCH RESTORING ADJUSTMENT

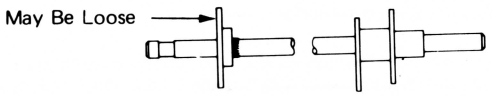
An easy way of adjusting the restoring cam follower (Level 2) is as follows:

1. Loosen the restoring cam roller nut and allow the roller to drop free.
2. Hand cycle the machine until the restoring cam follower is on the high point of the cam.
3. Place the pusher end of a large springhook between the cycle clutch latch pawl and the keeper. (Insert the springhook through the hole in the right-hand side of the keyboard.)
4. Place the machine on its feet and hold the follower firmly against the cam while tightening the locking nut.
5. Remove the springhook and check for the proper clearance .010" - .035" (0,25-0,89 mm) between the latch pawl and the keeper, on the cam lobe providing the smaller clearance.

6 SERVICE INFORMATION (CEM 211) (7/73)

CYCLE SHAFT - LOOSE CAMS

Some "Selectric" Typewriters have reached the field with loose cams on the cycle clutch shaft. When experiencing malselection problems, check to see that the cams are right and in the proper position.



1

SERVICE INFORMATION **(10/68)**

UPPER IDLER GEAR BACKLASH ADJUSTMENT - SERVICE TIP

1. Loosen the upper idler gear stud and print shaft gear.
2. Manually prevent the lower idler gear from turning.
3. Manually rotate the print shaft gear. This has the effect of "walking" the upper idler gear into position between the upper and lower gear.
4. When the correct position is reached, tighten the idler gear stud without allowing it to "walk" back to its previous position.
5. Retime the print shaft and retighten the print shaft gear.

2

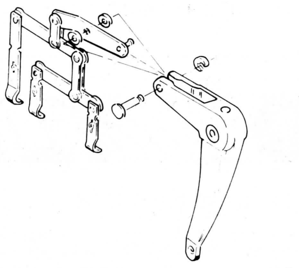
SERVICE INFORMATION **(CEM 371) (8/78)**

SOLID BALANCE ARM CONVERSION

Former level adjustable balance arm is no longer available for the "Selectric" Typewriter.

When installing the solid balance arm in the old level rotate bellcrank (23-220), install the two washers as shown.

The solid balance arm and the one piece rotate arm are compatible.



3

SERVICE INFORMATION

CHANGING TILT ADJUSTMENTS - TILT BELLCRANK STUD WEAR

When normal tilt adjustments are difficult to obtain or change after short use, check for tilt bellcrank stud wear. Wear on stud (23-484) is normally evident through visual inspection by the presence of a rusting condition or a gray powdered dust found on or near the stud. If either of these conditions are found, replace and lubricate the stud. The tilt stud should be checked and lubricated during each service call. An oil wick (23-36) is also available to help maintain the necessary lubrication.

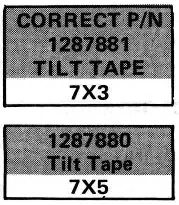
4

SERVICE INFORMATION **(CEM 406) (11/79)**

TILT TAPES - LABELS INCORRECT

Some gear tilt tapes have the wrong machine size listed on the label (Figure 1). The part numbers and tapes are correct. Disregard tape size description or make appropriate change (Figure 2).

Incorrect Label

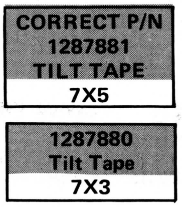


CORRECT P/N
1287881
TILT TAPE
7X3

1287880
Tilt Tape
7X5

Figure 1

Correct Label



CORRECT P/N
1287881
TILT TAPE
7X5

1287880
Tilt Tape
7X3

Figure 2

5

RELIABILITY **(CEM 429) (7/80)**

WEAK CYCLE CLUTCH DRIVE/CONTAMINATED LUBRICANT

On some Correcting "Selectric" II Model 895s the cycle clutch lubricant may have metal contamination. The contamination wears both the cycle clutch spring and cycle clutch pulley arbor, causing the clutch to slip. If experiencing weak cycle clutch drive and normal adjustments are not effective, do the following procedure:

1. Remove cycle shaft assembly and disassemble cycle clutch.
2. Thoroughly remove **all traces** of lubricant from cycle shaft assembly and cycle clutch pulley hub.
3. Install new cycle clutch spring, lubricate, and adjust.

Note: This procedure is effective in most cases. Do not replace the cycle clutch pulley hub unless these steps fail to correct the problem.

Between approx. S/N: Type 6126 (895) - 4765000 — 4874000.

Recovery Code
Expired 6-1-81

6

SERVICE INFORMATION **(CEM 457) (7/81)**

CYCLE CLUTCH SPRING - REDESIGNED

The extensions on the cycle clutch spring (23-404) have been changed to make them both the same length. The cycle clutch spring can now be installed with either extension to the left. Existing field stocks will be used until depleted.

7

SERVICE INFORMATION **(CEM 441) (11/80)**

TWO-PIECE ROTATE ARM REDESIGNED

The two-piece rotate arm (23-514) has been redesigned to interlock the upper and lower rotate arms together (Figure 1). This will prevent the parts from spreading during a print operation.

The individual parts (upper and lower arm) will no longer be available. The old style two-piece arm will be used until depleted.

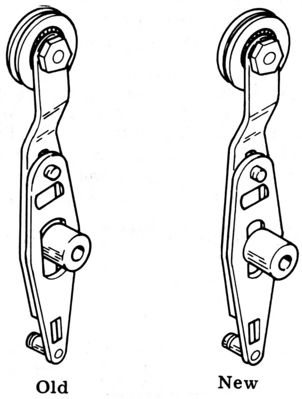


Figure 1

8

SERVICE INFORMATION **(CEM 442) (11/80)**

HOMING CHANGES - ROTATE TAPE REPLACEMENT

Rotate homing adjustment may change (drift) within a short time after replacement of a rotate tape. This can occur if the rotate tape is not fully seated, i.e., pulled tight, around the rotate pulley. Normal use causes the tape to seat properly, and the homing adjustment changes. This symptom is sometimes incorrectly referred to as "tape stretch."

After replacement of the rotate tape and completion of the rotate adjustments, type several lines of repeat underscores. Then check and make the typehead homing adjustment as required.

Note: Machine damage can occur from operating the repeat underscore before making correct rotate adjustments, as well as from operating the print mechanism without the platen and element in place.

9

SERVICE INFORMATION **(CEM 445) (11/80)**

ROTATE BELLCRANK STUD - INSTALLATION

The rotate bellcrank stud (23-483) now press/fits into the power frame. Install the stud through bellcrank (23-220), differential bracket (23-485), spacer (23-487) and power frame. Start nut (23-102) on the stud threads and tighten the nut until the stud bottoms against the power frame.

10

SERVICE INFORMATION **(CEM 446) (12/80)**

REPLACING BROKEN SELECTOR LATCH LINKS

The solenoid selection cables (24-353 Mag Card APM F/N 241-5584) used on the Mag Card can be used to replace broken selector latch links (21-316) on the "Selectric" Typewriter without removing the motor:

1. Remove the clevis from the selector latch link.
2. Remove the link by breaking it with duck bill pliers or other suitable tool.
3. Install solenoid selection cable (24-353 Mag Card) through hole in selector latch and attach the nut and clevis.
4. Attach clevis to the selector interposer and adjust the cable.
5. Tighten the nut after adjustment.

SHIFT

1 SERVICE INFORMATION (10/68)

SHIFT CLUTCH SPRING ADJUSTMENT - SERVICE TIP

1. Install shift clutch spring; allow the retaining plate screws to remain loose.
2. Place shift cam in uppercase position and hold in detented position.
3. Install clutch ratchet (uppercase position) so that its lug is toward the front of the machine and in front of the release arm lug.
4. Manually rotate the ratchet (clockwise) until the shift release arm lug now lies directly under the center of the clutch ratchet lug. The shift clutch spring and retaining plate will slip to a new position.
5. Remove the clutch ratchet and, without changing the setting, tighten one screw in the retaining plate. Do not allow the cam to become undetented.
6. Now reinstall the clutch ratchet, using the same spring hole as was previously used, and place it against the shift release arm (manually lock down the shift keybutton).
7. Set the overthrow stop clearance .010" - .030" (0,25-0,76 mm) and tighten the other retaining plate screw.

2 SERVICE INFORMATION (1/71)

SHIFT RELEASE LINK INCOMPATIBILITY

A few machines were shipped with special studs mounted on the right-hand keyboard side frames. These required use of modified shift release links to provide the necessary clearance. Should there be occasion to replace these shift release links, the interfering studs may be removed to allow use of the standard release links.

3 SERVICE INFORMATION (10/68)

SHIFT BACKUP ROLLER - ADJUSTMENT CHECK

If the machine is locked up because the shift clutch spring loop is caught between the arbor and the cam, the backup roller adjustment (16-46) should be checked (Level 1 Shift Cam). It has been found that a maladjusted shift backup roller allows the right-hand operational shaft bearing to be cammed in, thus increasing the clearance between the shift arbor and cam. This condition can be observed by observing the bearing for movement to the left when shifting to uppercase. The pusher end of the large springhook may be used as a wrench to easily adjust the shift backup roller eccentric shaft.

4 SERVICE INFORMATION (CEM 252) (4/74)

SHIFT ARM ROLLER WEAR

When taking a call as a result of malselection and no problem can be located, don't overlook the possibility of a worn shift arm roller. In most cases reported to date, wear of the roller has been caused by a rough finish on the shift cam. Replace cam along with roller if necessary.

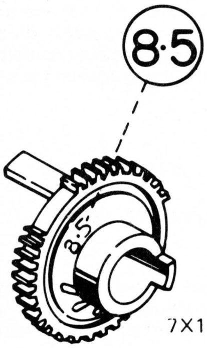
5 SERVICE INFORMATION (CEM 145) (3/72)

SHIFT RATCHET IDENTIFICATION

The current level 7X1 shift ratchet (16-64) can be identified by the marking 8.5. This marking was chosen because the 7X1 typewriter has an 8.5" (216 mm) writing line.

The XX3, XX5 shift ratchet has no markings.

Before, the 7X1 ratchet was identified by a silver colored release lug. These ratchets may be in stock and should still be used. (7X3's and 7X5's have a black release lug.)



7X1 Ratchet

6 SERVICE INFORMATION (CEM 235) (1/74)

SHIFT DETENT SPRING - PLASTIC CAM

Detent spring (16-216) can be used on early level plastic cam machines to give more reliable shift detenting. Clamp (16-218) must also be installed.

Caution: This is not a fix for improper shift adjustments or worn parts.

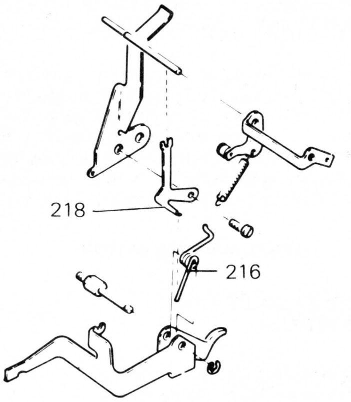


Figure 1

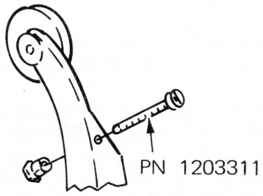
7 SAFETY

SHIFT ADJUSTING SCREW (CEM 349) (8/77)

Some reconditioned 7X5 "Selectric" machines have reached the field with a splined head lower case adjusting screw in the shift arm. This spline headed screw could cause hand injury when using the hand cycle wheel.

Check lower case shift adjusting screw on next service call.

Replace splined adjusting screw with screw (P/N 1203311).



Note: This change applies only to reconditioned 7X5's that were converted from "Selectric" I/O's. part references are shown in the MT/ST-I/O APM (16-49, P/N 1203311).

Recovery Code Expired 7-1-80

8 SERVICE INFORMATION (1/74)

SHIFT BEARING RETAINER PLATE ASSEMBLY

There have been three levels of the shift bearing retainer plate. The original was a die cast plate which is identified by its light gray color. The next level was a black punch-pressed plate with a removable bearing. The third and present level is a black punch-pressed plate with a non-removable bearing. This plate (16-31), which includes the backup roller and retainer, is the only one available. The plate assembly is compatible with both the black plastic and steel cam. The white plastic cam is no longer available on machines with the white plastic cam, if either the cam or the bearing needs to be replaced. If replacement of the die cast plate is required, replace plate (16-31), arm (16-105), shaft (16-52), two (2) "C"-clips (16-102), spring (16-104), screw (16-101), nut (16-100), and spacer (16-114).

SOUND REDUCTION PACKAGE

1

SERVICE INFORMATION **(CEM 325) (9/76)**

ON/OFF BUTTON JAMMED -
SOUND PACK MEMBRANE SUPPORT

The steel membrane support (30-25) should be removed from the keyboard before tilting machine to the upright position. The frame may fall under the on/off button, jamming it in the on position.

2

SERVICE INFORMATION **(CEM 330) (12/76)**

STEEL MEMBRANE SUPPORT -
CHANGED

The steel keyboard membrane support (30-25) has been replaced by a foam rubber support on machines manufactured with the sound reduction package.

Plant installed above approx. S/N: 8X3-1667030, 8X5-3117125.

3

SERVICE INFORMATION **(CEM 393) (5/79)**

ACOUSTICAL HOOD SEAL -
REDESIGNED 8XX

Acoustical hood seal has been redesigned for more durability and greater reliability.

The new seal is a friction fit part that snaps on. Install as shown in Figure 1. Plant installed hoods will have the seal glued on for shipping purposes. If it becomes necessary to glue the seal, adhesive may be used.

Note: Do not get adhesive on the visible surface of the hood. use safety precautions when using adhesives.

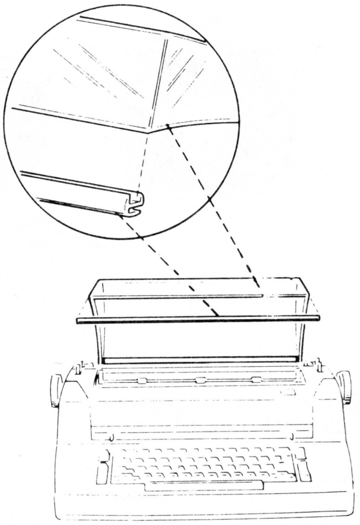


Figure 1

4

SERVICE INFORMATION **(6/80)**

SOUND REDUCTION B/M

When installing the sound reduction B/M the complete package should be installed. Elimination of any parts from the package results in a less effective sound reduction feature.

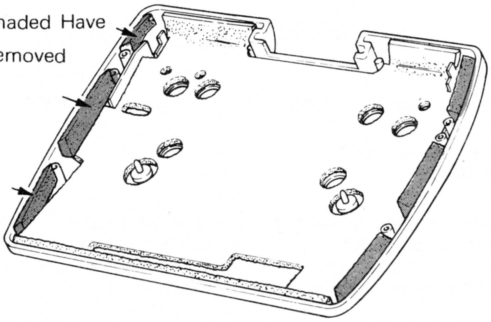
5

SERVICE INFORMATION **(CEM 450) (1/81)**

"SELECTRIC" III SOUND REDUCTION - B/M

The six insulation strips on the left and right sides of the bottom cover have been removed. These parts were found to be ineffective in the reduction of sound. The parts were included in early build "Selectric" IIIs, but will not be included in future B/Ms or machines.

Note: Until installation instructions are released for the "Selectric" III sound reduction B/M refer to the APM, Mech 30 right frame.



Parts Shaded Have Been Removed

Figure 1

SPACEBAR

6

SERVICE INFORMATION **(10/68)**

SPACEBAR FAILURE TO RELEASE

Failure of the spacebar to release may be caused by the cam release lever having too much overlap on the clutch wheel. The stop pad on the operational bracket may be formed to provide less overlap.

7

SERVICE INFORMATION **(1/71)**

SPACEBAR FAILURE -
ESCAPEMENT TRIGGER NOT RESTORING

Spacebar failure can be caused by a maladjusted escapement cam or excessive back-up of the cycle shaft.

As the cycle cam shaft is stopped by the cycle clutch sleeve, it may bounce back. This in turn causes the filter shaft to rotate backward. If the filter shaft rotates backward enough due to gear backlash, the escapement cam will not be properly timed. The escapement cam roller will not be resting on the low part of the escapement cam. This may prevent the escapement trigger from restoring after a character operation.

To check, rotate the filter shaft counterclockwise (looking at the gear) and operate the spacebar. Spacebar failure indicates a maladjusted escapement cam or excessive gear backlash. Do not use turning wheel.

Caution: Rotate the filter shaft gear by the hub only.

8

SERVICE INFORMATION **(1/74)**

INTERMITTENT SPACEBAR FAILURES

Intermittent spacebar failures may be caused by the spacebar interposer (17-1) slipping to the side of the spacebar latch (17-300). This can also cause the latch spring (17-7) to come off.

This condition may be corrected by carefully forming the interposer to center it on the latch. Steps have been taken in the plant to correct this problem.

9

SERVICE INFORMATION **(10/68)**

SPACEBAR INTERLOCK INTERMITTENT
OR INOPERATIVE

Some failures have been caused by not enough tension of the spacebar lockout spring (17-364). A check for this condition can be made by half-cycling any character and manually withdrawing the interlock from its active position. This check will indicate whether enough spring tension is available to pull the interlock fully into its active position.

The interlock may APPEAR to work reliably with the machine tilted up on its back, yet fail when the machine is placed in its normal typing position.

10

SERVICE INFORMATION **(10/68)**

SPACEBAR BINDS

In some cases failure of the spacebar to restore may be caused by the BS and CR repeat bail spring (03-106) being attached too far to the left on the spacebar equalizing shaft screw (17-136). This will allow the coil of the spring to bind on the equalizing shaft.

11

SERVICE INFORMATION **(1/71)**

SPACEBAR STIFF

A spacebar that is hard to depress may be due to burrs on the operational interposer latch plate (25-224). Turn the plate over if burrs are on the latch side of the plate.

12

SERVICE INFORMATION **(10/68)**

SPACEBAR INTERPOSER SPRING -
INSTALLATION

The spacebar interposer spring (25-210) should be hooked in the top hole of the interposer to stop repeat operation.

1 SERVICE INFORMATION (10/68)

SPACE TO PRINT B/M INSTALLATION - EARLY LEVEL MACHINES

If it is necessary to install the Space to Print B/M 1274214 on machines before approximate S/Ns 7X1 - 4133735, 7X3 - 4754535, and 7X5 - 4418324, also order and install B/M 1269569 so the link in B/M 1274214 may be attached to the interposer.

TAB

2 SERVICE INFORMATION (10/68)

TAB TORQUE BAR BINDING

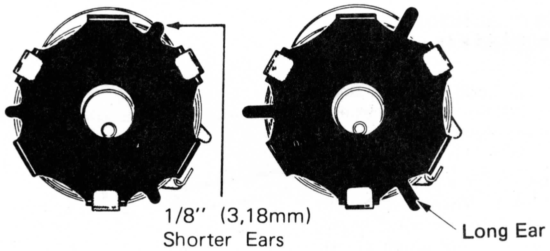
The extension on the left-hand side of the deflector may come in contact with the part of the tab torque bar to which the tab link attaches. This will cause the tab lever pawl not to latch out. To stop this condition approximately 3/32 of an inch should be cut off the extension. After cutting, use a file to remove all sharp corners.

3 SERVICE INFORMATION (1/74)

MAINSPRING IDENTIFICATION

"Selectric" Typewriters may have either a 75" (1,905 mm) or 100" (2,540 mm) mainspring. The 75" (1,905 mm) mainspring should be wound only five (5) turns with carrier at far right.

The 100" (2,540 mm) mainspring should be wound (7) seven turns with the carrier at far right.



100" (2540mm) Mainspring

75" (1905mm) Mainspring

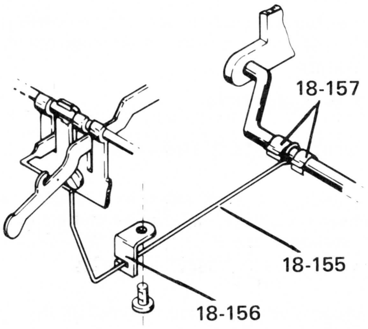
4 SERVICE INFORMATION (CEM 163) (5/72)

TAB KEYLEVER LINELOCK - FIELD INSTALLATION B/M

Most over-cleared and over-set tab stops are caused by the tab being actuated and the tab rack being rotated when the machine is turned off.

To prevent over-cleared and over-set tab stops, install B/M (18-200) to prevent tab operation when switch is off. Attach guide (18-156) to link (18-155) before installing. Disengage left end of linelock bail to install link.

Form the link (18-155) to not interfere with the tab keylever when the machine is on and to not allow the tab to be actuated with the machine off.



200—TAB KEYLEVER LINELOCK

5 SERVICE INFORMATION (CEM 373) (2/79)

DUAL PITCH TAB SET AND CLEAR BRACKET

When replacing the grease filled tab rack with the friction rack (19-31) in machines with tie rod paper feed, the set-clear bracket (19-2) should **not** be changed. The new bracket (19-2) will interfere with the tie rod frame. The old style bracket can be adjusted for proper operation.

1 SERVICE INFORMATION (CEM 376) (11/78)

TRANSPORT CORD PULLEY ASSEMBLIES - REDESIGNED

The transport pulleys (03-365, 03-366, 18-130, 19-149) have been changed to molded plastic (Figure 1). Plastic and steel assemblies are interchangeable. Steel pulleys will remain available until existing stock is depleted. Individual parts for these assemblies will not be available.

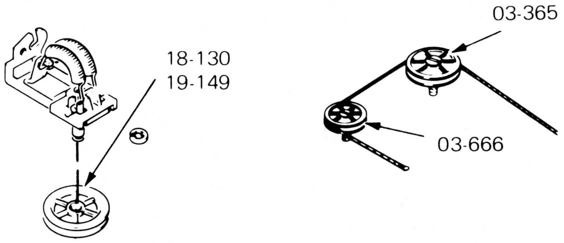


Figure 1

2 RELIABILITY (CEM 337) (6/77)

TAB LEVER (RB/S) SPACER - BINDING

When a (RB/S) tab lever binds, check the spacer (19-70) that is located between the tab lever (19-69) and the tab trigger (19-71). It may be cracked or broken.

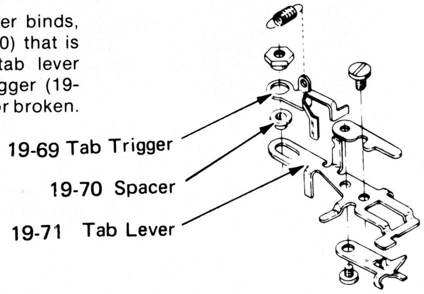


Figure 1

Between approx. S/N: 8X3 - 1690000 — 1769400, 8X5 - 3150700 — 3320000.

Recovery Code
Expired 3-78

3 RELIABILITY (CEM 415) (2/80)

TAB LEVER - WASHER/CLIP ADDED

A limited number of machines were manufactured with a C-clip or washer between the screw (19-7) and the tab lever (Figure 1).

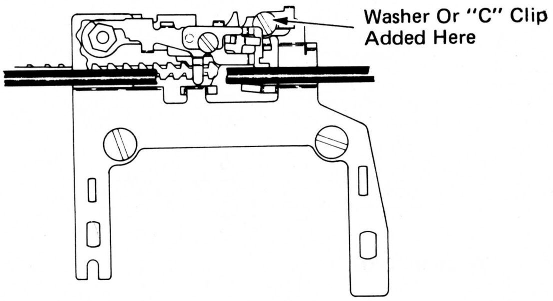


Figure 1

The washer or C-clip will prevent the tab lever from falling under the extension of the escapement bracket (Figure 2).

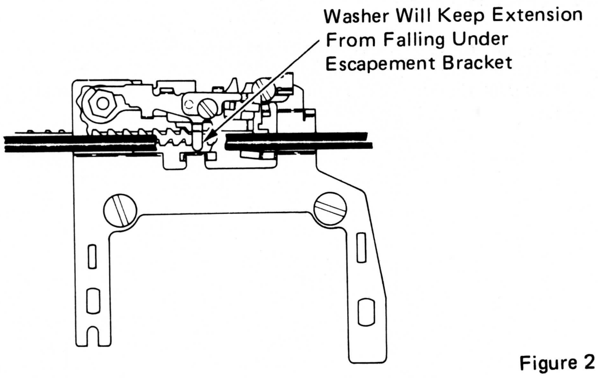

Washer Will Keep Extension From Falling Under Escapement Bracket

Figure 2

If experiencing a binding tab lever and the washer has been added; and normal adjustments do not correct the problem; replace the escapement bracket.

Approx. S/N: Type 6126 8X5 - 6513000—6545800; 8X3 - 5155558—5188352.

Recovery Code
Expired 1-81